FOOD DIGEST

Vol.9 No.1
January—March 1986

National Information Centre for Food Science and Technology
Central Food Technological Research Institute,
Mysore — 570 013, India

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RAW MATERIAL

1 Papaya

Papaya variety C0.6 is a new selection which has been developed at the Tamil Nadu Agricultural University from Pusa (CP.59) to meet the growing demand for papain in the international market. This tree which starts yielding in 230 days gives 80 to 100 fruits per tree in two and half years. The yield of dry papain is 890 kg/hectare.
The Hindu 24 January 1986, 19

2 Cholesterol free eggs anyone?

The Canadian Egg Marketing Agency has given microbiologist Roy Culamore of the University of Regina $ 26,000 to find a way of reducing the cholesterol content in eggs. What might surprise some people is that Culamore's approach to the problem is not a chicken feed additive but a bacteria introduced after an egg is hatched. He has discovered that certain types of bacteria, mainly soil organisms, will destroy cholesterol when blended into an egg mix. The microbiologist says that after six months of experiments, he has identified a whole range of bacteria that break down raw egg cholesterol completely. Culamore is now conducting experiments to find out how the organisms can be used commercially to produce what he calls a decholesterolated egg product.

The scientist concedes that the day when consumers can buy cholesterol free eggs is still a long way off and that the first commercial use of the bacteria will be undoubtedly in food processing in which raw eggs are a major ingredient of a product. However, he admits that cholesterol free eggs are his ultimate goal and he thinks it may be possible to treat egg shells with his bacteria and let the process of osmosis do the rest.
Food in Canada July/Aug 1985, 64

STORAGE AND INFESTATION CONTROL

3 A simple technique to store tapioca tubers

One of the major constraints in the utilisation of tapioca is the rapid perishability of the tubers after harvest. Biochemical changes and microbial infestation spoil the tubers and make them unfit for consumption within a few days after harvest. This often poses problems for farmers who are unable to dispose the produce immediately after harvest. Cutting the tubers into chips and sun-drying is one of the popular methods of storage of tapioca for safe disposal. But during the monsoon seasons and also in days of labour shortage farmers are unable to store tapioca in this manner.

Many techniques like waxing, storage in deep freeze and mud coating have been reported to keep tapioca fresh for long. In West Africa and some parts of Kerala surplus tubers are sometimes piled into heaps and watered daily to keep them fresh or coated with a paste of earth or mud which can preserve the freshness for periods of four to six days.

A simple low cost technology to prolong the shelf life of freshly harvested cassava was developed at the Central Tuber Crops Research Institute, after studying in detail the various causes of spoilage.

Undamaged bunches of freshly harvested tubers with a portion of the main stem are preferred for storage in moist sand/soil. After preparing pits of varying dimensions under shade, moist soil (sand) is spread at the bottom.

The size of the pits usually depends upon the quantity of the tubers to be stored. The moisture in the soil (sand) is adjusted within the range of 10-15 per cent by sprinkling water. Bunches of harvested tubers along with the intact stem could be arranged layer by layer spreading the moist sand in between the layers. After arranging three such layers the pits are to be covered with moist sand. Since the top layer of sand gets dried quickly, water may be sprinkled occasionally on the top layer.

Sprouting of the buds from the intact stem is very often noticed in the presence of moist sand and soil. The germinated buds from the bottom layers are unable to come out of the soil surface while profuse growth of apical buds from the top layer could be seen. Therefore periodical nipping of the visible sprouts is required. While the undamaged tubers remain healthy throughout, damaged tubers very often deteriorate due to the activity of a bacterium suspected to be Bacillus sp.

Fresh tubers could be stored in this manner for two months with little changes in the biochemical constituents.
The Hindu, January 29, 1986, 28

4 Chilled sea water to preserve fish

The College of Fisheries, Mangalore has evolved a cheap method of preservation of the fish by using chilled sea water.

Sea water, chilled with ice, was used to preserve seasonal fishes like sardines and mackerels caught in plenty in the coastal areas of Mangalore.

The pelagic fishes caught and so preserved were found to retain their freshness better than those preserved with only

ice or left without ice in the open deck of the fishing craft. This was now found popular among small fisherman, who were able to transport fishes from Mangalore to Bombay's Crawford Market, where they fetched better prices.
PTI Science Service 5(2), 1986, 6

5 Preserving processed meat without refrigeration

Frankfurters, bologna, and similar foods all require refrigeration, even though they are smoked or pickled, to prevent their becoming soft and mushy due to heat deterioration. The U.S. Department of Agriculture has found a method to make refrigeration unnecessary.

Researchers have discovered that with the addition of up to 0.5% of xanthum gum to finely ground beef and pork, the product can be preserved in vinegar pickling at temperatures up to 37 C for extended periods of time.

In the research for this innovation, xanthum gum was evaluated along with sodium caseinate, gluten, locust bean and guar gums, gum arabic, carrageenean, and chitosan. Xanthum gum passed the tests with highest ratings.

Although the xanthum gum can be added in different ways and at different times, it can easily be added along with spice, nitrate, ascorbate, sugar, salt and water when the emulsified meat product is being prepared.

After the product is stuffed into casings, it is further processed in a smokehouse and stored in an acid medium such as vinegar pickle. The process also provides a surprising means of lowering considerably the salt concentration in the emulsified meat product.
Financial Express 19 February 1986, 10

6 Use of radiation to preserve foodgrains

In a major policy decision, the Centre has approved the use of radiation to preserve foodgrains and other edible products such as fish, onion and potatoes.

Irradiation disinfests grain, inhibits sprouting in potatoes and onions, delays ripening of fruits, eliminates pathogens from frozen seafoods, prevents microbial contamination of spices, and generally extends the shelf life of most foods.

The safety of food processed by radiation has been examined nationally and internationally. The Food and Agriculture Organisation (FAO), and World Health Organisation (WHO) ruled in 1980 that food items irradiated upto a specified dose were safe, and that irradiation did not present any toxicological hazards. Today, about 30 countries in the world use the technique to preserve over 40 items of food.

In India, proposals for adopting the technique had been pending approval for over a decade because of apprehensions about the effects of eating irradiated food.

The Bhabha Atomic Research Centre (BARC), Bombay, which has done considerable work on irradiation, plans to undertake techno-economic studies in some villages before embarking on setting up a large-scale facility, according to Dr P.K. Iyengar, Director, BARC.

To start with the technique will be tried on onions and potatoes on a pilot scale. "If found successful, it will be used on other food items as well", said Mr. Buta Singh, Union Agriculture Minister.
The Hindu 3 February 1986, 16

7 Insect detection inside the fruit

Insects in fruits, nuts, and grain are being studied in the USDA-ARS laboratory to Gainesville, FL.J.C. Webb is using stethoscopes to detect motion by insect larvae inside fruit, seeking a nondestructive method for inspecting fruit shipments for infestation. He and his colleagues have been using the system, which includes hooking the stethoscope detector to an oscilloscope, a recorder, or a computer, to study Caribbean fruit fly larvae in grapefruit. They can also detect larvae inside grain kernels. They have correlated spcific noises with particular larval activities, and can relate the intensity of sound to the age of the larvae. They can detect one infested kernel in a quart of sound wheat; one of the goals of the continuing research is to be able to examine bulk grain for infestation by merely inserting a probe and listening for insect noises.
Cereal Foods World Nov 1985, 809

FOOD ADDITIVES

8 Sweeter than aspartame

A high intensity sweetener, said to be about 600 times sweeter than sucrose, has been developed by Tate & Lyle, U.K. following a £ 5 million investment in its research and patenting. The British company has signed an exclusive agreement with Johnson & Johnson, U.S., who will file for its use to the FDA following further tests.

Based on sugar, the sweetener is much cheaper to produce than aspartame, yet is 3 to 4 times sweeter. When compared to other sugar substitutes, the new sweetener has the sweet taste closest to sucrose, yet has only a slight lingering aftertaste.

less noticeable than with aspartame.

The new product is very stable at low pH and elevated temperatures and is more resistent to hydrolysis than sucrose. It is not metabolized by digestive enzymes and therefore will be non-caloric and will not contribute to dental caries. The heat stability is similar to that of sucrose so it can be used in cooking and baking, offering a superior advantage in this application over aspartame that decomposes upon heating.
Food Engineering International October 1985, 16

Aztec sweetner

A team at the University of Illinois, Chicago, has rediscovered sweet-tasting plants and has obtained specimens of L. dulcis from Tlayacapan in central Mexico, and isolated the principal sweet component, hernandulcin present mainly in the leaves and flowers.

To test whether the compound is safe to use as a sweetner, (±)-hernandulcin was tested on Salmonella to examine its mutagenic activity, no significant mutagenicity was observed. Examination of its toxicity on mice showed no mortality at doses as high as 2 g kg^{-1} Experimental human tasters rated natural ((±))-hernandulcin at a concentration of 2.0×10^{-4} as equivalent in sweetness to 0.25 M sucrose solution (i.e. three orders of magnitude sweetner), though slightly less pleasant than sucrose, with some bitterness and after taste.

The sweet-tasting compounds bind stereoselectively with a receptor in the taste cell membrane. In the case of hernandulcin, it is the carbonyl or hydroxyl group that is involved since the compound loses its sweetness when these are modified.

The structural simplicity of hernandulcin, its easy synthesis, and its intense sweetness, make it a possible target for structure sweetness studies. These would be an aid to designing a non-toxic, non-nutritive sweetner for the food industry.
J. Sci. Ind. Res. 44(9), 1985, 513

10 Aragum - Substitute for Gum Arabic

A new kilo-for-kilo substitute for Gum Arabic that is said to offer superior stability characteristics in flavor emulsion formulations has been developed by TIC Gums. Designated "Pretested Aragum 2000 Powder", this unique blend of starch and water-soluble gums may be used in levels as high as 18% as a direct 1:1 replacement for spray-dried Gum Arabic in coating and adhesive applications: In flavor emulsions, Aragum 2000 has the added feature of providing a uniform "cloud" to the finished beverage .
Food Engineering International 10(9), 1985, 12

11 New microbial rennet produces good flavour

Renzyme is a new Mucor pusillus microbial rennet coagulant which the maker says produces good cheese flavour, body and texture. Approved also for general Kosher use, Renzyme is the latest in a broad line of coagulants for cheese makers.
Food in Canada June 1985, 57

PROCESSES

12 Beer brewing with immobilised yeast

Japanese biotechnologists have developed a new fermentation system incorporating an immobilised yeast reactor yielding a rapid production of beer with excellent quality containing a low level of diacetyl precursors.

The key to the new method, developed by scientists at Tokyo's Kirin Brewery Company, is a special wort formation which contains pressed yeast (Saccharomyces uvarum)_ and is stirred as a mixture at 500 rpm for 10 hours.

The immobilised yeast reactor is a cylindrical column of polycarbonate plastic eight cm inside diametre and 500 cm in length, in which five flange-like baffle plates are mounted at positions of 5,15,25,35 and 45 cm from the bottom. Five cylindrical baskets (7 cm outside diametre, 10 cm long), in which the immobilised yeast beads are packed to 70 per cent of the volume, are placed in the reactor. The baskets consist of stainless steel wire-netting of 9 mesh.

Yeast beads are prepared as follows: a 380 g sample of pressed yeast (Saccharomyces Uvarum) is suspended in 2400 ml of 1 per cent sodium alginate. The suspension is slowly extruded as drops into a 0.05M Cacl$_2$ solution at room temperature through a tube with a 1 mm diametre tip. The drops form into beads upon contact wioth the CaCl$_2$ solution and the beads are stored at 0 C for 24 hours to allow their complete gelation before use. The beads are approximately 3 mm in diametre.

For deriving the fermented wort, a 50 g sample of pressed yeast is pitched in 10 litres of wort at 20 C, and the mixture is stirred aerobically at 500 rpm for 10 hours. The yeast is then removed from the mixture by centrifugation at 4000 rpm for 15 minutes, and carbon dioxide is bubbled into the resultant fermented wort at 8 C to adjust the dissolved oxygen content to the desired level.

The fermented wort is then pumped into the bottom of the reactor at a flow rate of 120 ml/hr. The reactor temperature is maintained at 8 C.

Fermented worts with dissolved oxygen contents of 0.04 mg/l and 8.5 mg/l, respectively, are fed into the reactor continuously for 72 hours at a flow rate of 120 ml/hour.

When fermented wort containing dissolved oxygen at 0.04 mg/l (anaerobic fermented wort) was fed into the reactor, the concentration of diacetyl was not more than 0.4 mg/l.

After this point the fermentation stage begins where the specially prepared wort is drained of its yeast content by centrifugation at 4000 rpm for 15 minutes. The total diacetyl content of the effluent is high in the first three days, and then decreases to a constant level of 0.3 to 0.35 mg/l. Thus in the steady state, less than 0.1 mg/l of total diacetyl is formed during fermentation in the immobilised yeast reactor.

The beer produced by the new fermentation method does not differ practically in its common characteristics, such as apparent attenuation degree, alcohol, pH, alpha-amino nitrogen, total nitrogen, carbon dioxide, isohumulones and flavour volatiles, from beer produced by the conventional batch-wise fermentation from the same wort. The taste of the beer from the new was judged mild, smooth, light and refreshing by a panel of beer tasters.

With the new system, it is now possible to produce excellent beer with a low content of diacetyl precursors within a day, compared to a conventional batch-wise fermentation of about nine days. This translates to a two-fold increase in productivity per reaction volume.
PTI Science Service 4(22), 1985, 24-26

13 Wine aging by irradiation

This is being studied by winemakers. Discussion is primarily on how broad the approval of irradiation for sterilization should be, but some research done in the early 1960s at the University of California at Davis has also been resurrected and examined. The University researchers found that irradiating young wine results in new flavor generation and other modifications - a possibility that is generating interest in the wine industry. Not only would the different array of flavor nuances in irradiated wines lead to additional marketing potential, speeding up the traditional aging process would produce economic advantages.
Cereal Foods World, May 1985, 359

14 Milk powder sweet

Traditional preparations based on milk, such as milk sweets, are items of choice of millions in India. Among the milk-based sweets, gulabjamun occupies a prominent place as a delicacy. The Shelf-life of gulabjamun, conventionally prepared from khoa (a heat concentrated milk product with 35 percent moisture), bleached wheat flour and baking powder, hardly exceeds one week at ambient temperatures. Considerable variations are observed in the compositional and textural properties of the sweet sold in the market, as a consequence of varying quality of raw materials and techniques used in the preparations.

To overcome these problems a technology for the manufacture of gulabjamun base from dried skim milk has been developed at the National Dairy Research Institute, Karnal, India. The mix consists of roller-dried skim milk (43.4 percent), vegetable fat (15 percent), bleached wheat flour (25 percent) and semolina (0.1 percent). The shelf-life of the formulated mix in polyethylene pouches at 30 C is 5-6 months. The mix can be sold in bulk or retail with printed instructions for the preparation of gulabjamun.
Asia Pacific Tech Monitor, Sept-Oct 1985, 37

15 Coconut milk in powder form

Powdered coconut milk is now being produced in Malaysia, for the first time, on a commercial scale, following a successful joint research project conducted by the Malaysian Agricultural Research Development Institute (Mardi) and a local food processing company.

The capacity of the plant at Parit Raka in Batu Pahat is 2,200 tonnes per annum of powdered coconut milk (santan powder), based on an input of 12 million coconuts a year. The production process involves the shelling and paring of fresh coconuts, grating, squeezing, pasteurising and spray drying before packaging.

It is claimed that the product does not contain any preservatives and is shelf-stable for about eight months without refrigeration. It can readily be mixed with water at room temperature to reconstitute coconut milk that can be used by food manufacturers, caterers, institutional and restaurant operations and housewives.
Kaigarika Varthe Jan 1986, 6

16 Cold treatment of tea leaf

A new technology worked out by Soviet specialists helps reduce the cycle of tea leaf treatment from 10-12 to 1-2 hours. It is based on freezing the tea leaves so that the water in the cells freezes and the intracellular ice crystals thus formed destroys them easily.

During rapid thawing in special conditions, all the fermentation processes are started simultaneously and become controllable. Since the time involved is very less, undesirable reactions that ruin the tea do not take place and, as a result a fine beverage of better quality is obtained. In order to impart tea leaves their traditional sickle-shape form, characteristic of the good varities, the defrosted tea is subjected to breif rolling. All the processes are conducted for a strictly fixed time and under special temperature.

The use of new technology fully rules out the stage of sun-curing (drying of tea leaves to remove surplus water). The newly picked tea is put straight into the refrigerator.

Experts have calculated that the introduction of this new technology will produce a major economic effect. Besides, this method will, possibly, solve the problems of seasonal work for tea-packing plants.
Asia Pacific Tech Monitor Sept-Oct 1985, 37

17 Immobilisation may reduce carcass AC holding time

Lamb carcasses are normally held for 90 min. after high voltage electrical stimulation before freezing begins. This is part of the AC specification to ensure acceptable tenderness.

Because electrical immobilisation of carcasses after sticking is a form of low voltage stimulation, it will allow reduction of AC holding time to 60 min under certain conditions, i.e. if immobilisation is applied for at least 45 sec, square or half sine wave pulses of 45 v peak are used; current is applied to both hind legs; woolly lambs receive sufficient current (wool can increase contact resistance) and normal, high-voltage stimulation follows within 30 min.

Unless all these conditions are met in full, AC holding time must remain at 90 min. A detailed specification will be issued shortly.
Food Technology in New Zealand 20(1), 1985, 7

18 How laser optics spot kernel cracks

"Engineering Outlook", newsletter from the University of Illinois College of Engineering, devotes an article to work by agricultural engineers there in utilizing laser optics to spot minute defects in corn kernels. The hope is that this method can replace the time-consuming and not always accurate visual inspection now used. They use laser optics to measure the difference in light reflectance among cracked and whole sections of kernels. Almost 100% accuracy is obtained when spotting seriously damaged kernels. Fine cracks and splits now are identified about 80% of the time. A low-power helium-neon laser is used.
Agricultural Engineering 66(7), 1985, 5

BYPRODUCTS AND WASTE UTILIZATION

Nil.

PROCESSED PRODUCTS

Nil.

EQUIPMENT AND MACHINERY

19 Moisture/solids analyser

CEM Corporation of USA manufacture the Model AVC 80 to automatically measure the % moisture/solids in all types of materials; including solids, liquids, and slurries from 0.01 to 100% moisture. Complete measurement requires typically 2 to 3 minutes. The AVC-80 is suitable for measuring dairy and food products, chemicals, pulp and paper, tobacco, polymers, cosmetics, pesticides, etc. For further information write to: Neotronics International Ambaji Apartments, Devidayal Nagar, P.O. Box 7754, Mulund (W), Bombay 400 080.
Industrial Products Finder 14, Annual Number, 1985, 116

20 On-line process analyser

Applikon B.V., Holland, manufacture on-line Titro-Analyser ADI-2020, a micro-processor based single/multi stream production and helping process analyser. The analyser finds applications in industries such as chemical, food, beverage, etc. for on-line analyses of dissolved metals, inorganics, organics, pH, conductivity, ion selective, water in solvents, etc. and to carry out all types of titrations like acid/base, complexometric, colorometric, iodometric, precipitation, redox, etc. For further information contact Neotronics International, P.O. Box 7754, Bombay 400 080.
PFNDAI Newsletter No: 43, 1985, 2

21 Case integrity analyzer

The Case Integrity Analyzer System (CIA) is the latest development in the field of filled can dud-detection within its sealed case.

After the CLA system is set-up, there are two stages of testing. The sealed case is directed on to the Analyzer Bed where the first stage test for hard swells is indicated. Then the Test Changer is air evacuated and the second stage test for leaking and missing cans takes place.

The system is available in three models (CIA24, CIA12, CIA6) in order to suit most can series 202 through 603 case sizes single or double layered.

For more information contact dun-Rite Products, 28W123 Industrial Avenue, Barrington, ILL 60010.
Food Production/Management 107(10), 1985, 12

22 Speeding up juice extraction

The Kalamansi fruit is one of the smallest fruits in the citrus family, known for its Vitamin C content and its distinctively acid flavour. To be able to process kalamansi juice on a commercial scale, the use of a device to speed up the extraction of the juice is absolutely necessary. To answer the need, a mechanical extractor prototype was designed at the College of Engineering of the University of Philippines.

The whole fruits are fed into the hopper of the extractor, no slicing step is necessary prior to juice extraction. The device is equipped with spiked rollers which puncture the fruit and apply pressure to squeeze out the juice. The amount of pressure is controlled by adjusting the clearance between the rollers.

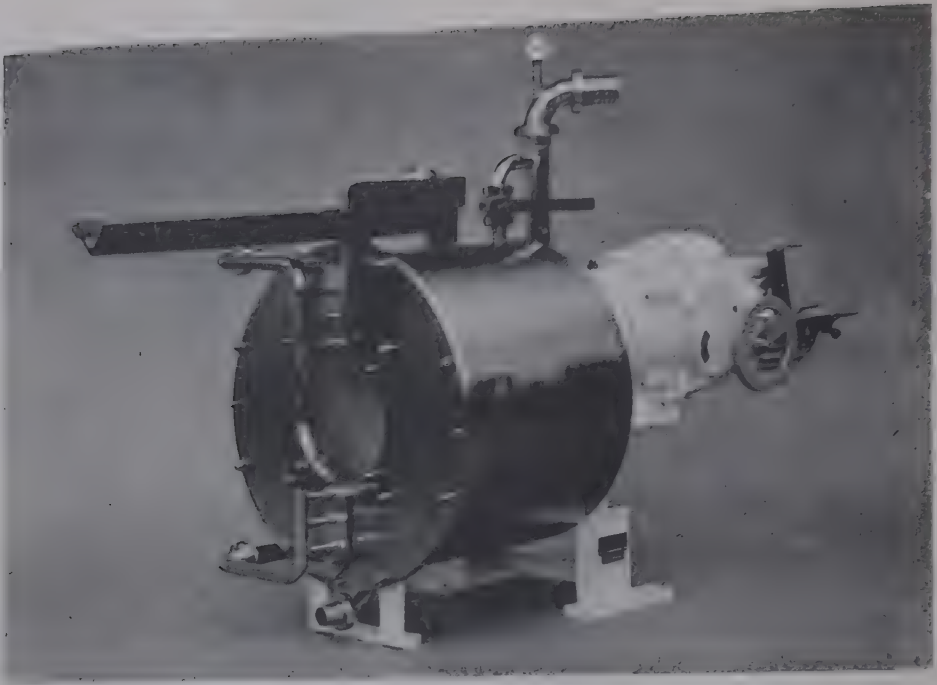
The test runs on the extractor have shown the definite advantage of the extractor over hand-squeezing of fruit in terms of extraction time. However, in view of the lower yields obtained, some modifications may have to be considered before the extractor can be made available to juice processors.
Asia Pacific Tech Monitor Sept-Oct 1985, 37

23 Heating jackets

Thermo heating jackets are custom built to heat vesels with shapes that range from the very simple to the extremely complicated. Reaction vessels, storage tanks, valves, filters, pumps, flow meters, motors and distillation columns etc., in almost any chemical industry ranging from pharmaceuticals to cosmetics, food to confectionery to paints, resins, rubber and fibre industries, find an instant and ideal application for thermo heating jackets. General engineering industries and research units too can use this versatile product. For further information write to: Thermopads, 4th Floor, Moghul Court, Deccan Tower, Basheerbagh, Hyderabad, Andhra Pradesh 500 001.
Industrial Products Finder 14(3), 1985, 155

24 New scraped-surface heat exchanger

From Switzerlands Fryma comes notice of a continuous scraped-surface heat exchanger with some notable features. First, when processors handle fats, margarine, peanut butter and the



like, product tends to become hardened during the cooling. Thus, the heat exchange must be combined with a mechanical motion.

With the equipment shown, the Fryma Coolmix, instead of occupying the processing tank with a cooling jacket and stirrer - for hours on end - the cream is cooled advantageously. That is product can be cooled either quickly or very carefully, in accordance with the product's structure. The cooling, in other words, is variable according to user's need.

Another feature of this design, is the small, minimum space requirement for installation.
Food Engineering International November 1984, 52

25 Plate heat exchanger

Filtron offer a range of plate heat exchangers for cooling, heating, and energy heat recovery, as well as for use as condensers and evaporators, in various industries. The range includes different models to suit capacities up to 2,200 m^3 /hr at 220 C. The unit incorporates the Combiflow system for high heat transfer rates even at low flow rates, it is said. The plates are available in AISI 304, 316, titanium, hastelloy, and incoloy; connections in SS 304, 316, titanium, hastelloy, and incoloy with rubber lining; and gaskets in nitrile, butyl, hypalon, viton, EPDM, and Klingerite. For further information write to: Filtron Engineers Pvt. Ltd. Gokul, Fergusson Road, Pune, Maharashtra 411 005.
Industrial Products Finder 14, Annual Number, 1985, 552

26 Drum heaters

Tempo Instruments new drum heaters provide an easy, effi-

cient and clean way for handling viscous or low melting point solidified materials in drums. Such materials include asphalt, bitumen, fats, gelatine, glucose, greases, lubricating oils, paints, petroleum jelly, phenols, plastics, sodium, tar, vanaspati, vegetable oils, varnishes, waxes, etc. Tempo drum heaters are mobile ovens heated by Tempanel flexible, electric, surface heating elements operating at black heat. The design is very rugged and can withstand normal usage in chemical industries. They can be used for heating the contents of drum kept in vertical position. The contents will be heated at a rate depending on the size of the drum and its contents. The contents may either be melted completely and removed as liquid or they may be melted only at the surface touching the drum walls and removed as solid block by tilting the drum. The heating in drum heaters is gentle and uniform and there is no change of local over heating. Automatic temperature control is provided as standard unit. A special insulation lagging is provided to maintain the body temperature to tolerable limits. Maximum surface temperature is 500 C and is obtained in about 90 minutes. The electrical consumption is 12 kW at 400 VAC, three phase four wire supply. For further information write to: Tempo Instruments and Equipments Pvt. Ltd., Technical Service Dept., 1 Lamington Chambers, 394 Dr. Bhadkamkar Marg, Bombay 400 004.
Industrial Products Finder 14, Annual Number, 1985, 601

27 Fryer with adjustable conveyor

Heat and Control, U.S., has introduced a new fryer with an adjustable conveyor that is able to cook everything from "meatballs to bone-in chicken parts to patties and vegetables". The variable height conveyor on this line of continuous fryers adjusts for products between one to five inches (25 to 127 mm) thick.

The distance between the product conveyor and submerger conveyor is manually adjusted from one point on the conveyor frame. With a corresponding adjustment in fryer level, different foods can be cooked with the same fryer. Since oil level is changed to suit the product, a minimum oil volume is maintained. This reduces oil usage, provides faster oil turnover rates and increases product shelf life and freshness.

The Heat and Control fryer is externally heated and features continuous oil circulation and fines removal. Multiple oil inlets provide precise temperature control throughout the cooker.
Food Engineering International, October 1985, 100

28 Frying system saves fuel, oil

These fryers don't heat oil in the frying chamber. Instead, the oil is heated in a separate heat exchanger, then circulated through the frying area and then through a continuous oil filter. There are several benefits to this method of operation.

For one thing, oil temperature is controlled within ± 2 C, eliminating burning or charring. Too, very little smoke is given off during cooking because oil temperature is lower. With direct heating systems, hot oil vapors and steam can fill the work area because of the high temperature necessary to heat the oil. Heavy exhaust fans are required to remove this gas and hot air. With the Hi-Cook, only light or no venting is needed.

Less oil is necessary to operate the fryer, and the oil that's used lasts longer. The oil never becomes charred or damaged in any way. And, because oil is in motion, heat transfer is faster. And faster heat tansfer means quicker frying, more product per production hour, lower operating costs and higher profits.

Fuel savings are the most dramatic statistic. A direct-fire, 500,000 BTU/hr. fryer operating at 30% efficiency consumes 16.7 therms of natural gas per hour. The same capacity Hi-Cook fryer operating at 67% efficiency consumes less than half as much, about 7.46 therms/hr. If you take these figures and look at them over a 2,000 hour operation period, the direct fire fryer burns $ 24,048 worth of natural gas (based on 72¢ /therm). The Hi-Cook fryer burns $ 10,742, a savings of $ 13,306.

The heat exchanger plays an important role in achieving savings. It's rated at 67-72% efficiency, and it heats oil without burning.
Food Engineering International, November 1984, 60

29 Sterilizing with electrons

What exactly is an electron beam sterilizer? The inner workings are comparatively simple. As its name implies, electrons, not gamma rays, are the sterilizing force. The electron source or filament is heated in a vacuum. A cathode emits electrons that are accelerated through an electric field inside the vacuum "tube". The accelerated electrons now have high kinetic energy and, therefore, have more penetrating power. They pass through a "window" made from a thin piece of foil and into the product. The result is sterilization at a high rate of speed; up to 500 meters per minute in some instances if necessary, for typical microbial burdens. One can now predict that the first practical applications of in-line electron sterilization will be the semi-processed foodstuff.

The most significant benefit of electron beam sterilization for commercial applications is speed. The radiation dose rates with electrons are typically 100,000 times that of gamma ray sterilizers - as a result, treatment times are reduced to less than 0.1 second, compared with the 10,000 seconds (3-4 hours) in the conventional approach.

Since modest treatment levels are usually required to provide a satisfactory sterility assurance level (say 2 megarads or 4.8 cal/gram), modest power levels will handle relatively high throughput. For example, an electron beam sterilizer delivering a beam power of 10 kilowatts will sterilize one ton of product per hour, or disinfest 100 tons per hour.
Food Engineering International, November 1984, 54-55

30 Food sterilizer for HTST cooking

The growth of the aseptic packaging market coupled with the food processing industry's ceaseless efforts to maintain high levels of quality, flavor and texture over longer periods of time, has caused an increase in the need of HTST cooking. Sun-Plus has developed a hot-water pressurized cooker sterilizer to fill that need.

The food sterilizer handles a diversity fo food packed in a variety of hard or soft packages such as cans, bottles, trays, pouches, etc. The design of the machine permits the processing of soft containers with sealed-in air without deforming the shape of the packages, while at the same time lessening the threat of damage to the sealed section or spoilage of the contents.

Important elements of the food sterilizer are its patented water circulation device, the four-way flow control and circulation mechanism that permits quick and uniform heating and cooling of foods. Another feature of the sterilizer is a fully computerized system to shorten process time, thus resulting in high productivity and a savings in both water and energy. Stainless steel component parts offer an improved sanitary environment and greater durability.
Food Engineering International November 1984, 72-73

31 Pulveriser

Precision Products of Ahmedabad manufacture the Bombay Pin Mill, which is a specially designed pulveriser to grind a range of materials to any predetermined fineness, from coarse granulation to fine powder up to 150 mesh. The grinding operation is effected through beating, shearing, crushing and auto collision of material. Feeding is automatic by a feed-hopper provided with oscillating sifter and is controlled to any desired rate. Large pieces of material are fed directly in the centre of the rotor, and are conveyed to the periphery of the rotor through a series of beater plates, thus gradually reducing them to the desired fineness. Sieves of the required mesh are placed round the rotor and allow the pulverised materials to be ejected into the collection chamber. The mill is suitable for chemicals, foodgrains, spices, tobacco, herbs, vegetable products, etc. It is available in five models. For further information write to : Jayems Engineering Co. Pvt. Ltd., Great Western Bldg., 1st

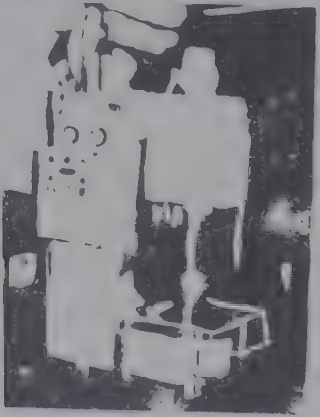
Floor, 130/132 Bombay Samachar Marg, Bombay 400 023.
Industrial Products Finder 14, Annual Number, 1985, 367

32 Hammer type pulveriser

Jayems Parkim Pvt. Ltd., Thane, manufacture the Jayems Miracle Mill (hammer type pulveriser) which is suitable for grinding tea, cattle feed, chicken feed, fish meal, spices, agricultural products, coffee, tobacco, etc. The material is fed into the grinding chamber of the mill where it is reduced in size by mechanical hammers which shatter the material be ground in mid air. The material is immediately reduced in size and is drawn out by a suction fan through a sieve located at the base of the grinding chamber. The ground material is conveyed pneumatically to a cyclone separator. For free flowing material the mill can be used without fan and cyclone separator. Also offered is mill with SS contact parts. For further information write to: Jayems Engineering Co. Pvt. Ltd., Great Western Bldg., 1st Floor, 130/132 Apollo Street, Bombay 400 023.
Industrial Products Finder 14, Annual Number, 1985, 577

33 Fluid bed dryer

Chemech Engineering have developed a fluid bed dryer for processing difficult to dry granular and other lumpy materials like fine chemicals/pharmaceuticals, intermediates, food products, polymers and dyes. Unique combination on automatic filter shaking device maintains uniform rate of drying and heat transfer. Product container with optional autocycling paddle agitatior accelerates the rate of drying, maintains fluidization and avoids shifting and bridging of the product. Pressure relief panel makes the equipment safe for drying solvent based products. Forced draft unit allows corrosive and toxic gases exhaust out of the plant room reducing the risk of the health hazard and corrosion of the equipment. High percentage of moisture is removed in comparatively less time and carryover of the product is minimal. Thermal insulation of heated chambers prevent temperature rise in the plant room. High degree of dryness with control drying temperature have been established with pilot trials with various products like drugs, fine chemicals, polymers, starch, lactose, food products, viscose.



tabacco dust, etc. For further information write to: Chemech Engineering, 106 Udyog Bhavan, Sharma Industrial Estate, Walbhat Road, Goregaon (East), Bombay 400 063.
Industrial Products Finder 14, Annual Number, 1985, 645

34 Vegetable dryer decreases fuel consumption

The EFD dryer comprises of three separate drying conveyors, five controlled-temperature zones, a feed system, heat recovery modules and a computer-based control system operated by PLC sequence. The ruggedly constructed dryer has been designed to offer high quality products, with complete uniformity during all stages of the drying process. A high level of efficiency has been engineered into the dryers by equipping them with electronic conveyor speed variators and programmable sequence and temperature controls.

While conventional dryers waste hot exhaust air, the new dryer boasts a key design feature permitting the recovery of heat from entering exhaust air. This is accomplished by routing the sensible heat content of exhaust air through specially designed air-to-air heat exchangers where the incoming outside air is preheated.

Close control of heated air temperature levels is maintained by PID digital controllers, part of the PLC system. In its battle against heat loss, Electra's energy-conscious engineers have fully enclosed and insulated all transfer sections, using isocyanurate closed cell insulation. The use of this material is extended to all side door panels, roof and floor panels. Also featured are high-efficiency steam coils copper tubes with aluminum fins.

With this combination of vapor-tightness and enclosed transfer sections, exhaust air heat recovery system and efficient insulation, the natural outcome is substantially lower operating costs. An optional solar energy system for the final drying stage further enhances reduced fuel expenses.

The EFD dryer is significantly less expensive. The new dryer takes up less area per unit of output capacity.

Another key feature of the EFD conveyor dryer is that it is designed exclusively to meet the special requirements of vegetable dehydration. Accommodating the processing needs of a wide range of vegetables, the unit includes features for swift and easy changeover. Only stainless steel has been used where contact will be made with product, offering hygienic operation and freedom from contamination.
Food Engineering International 10(9), 1985, 44

35 Thin film evaporator

Kontrol of USA have developed three types of thin film

evaporators, each suitable for a particular part of the application range and incorporation into continuous plant processes. All variations of these types employ the agitated thin film principle, and incorporate reverse taper design for controlled residence time. The horizontal reverse taper evaporator has precise control over residence time, processing extremely heat sensitive liquids, single pass concentrations up to 99%, it is said. The vertical reverse taper evaporator finds a variety of general applications with counter-current vapour flow. The Hikon VL evaporator is for processing extremely viscous liquids up to 1 million cps. The evaporators may be used for concentrating, distilling, reacting, stripping, desolventising, degassing, etc. Pharmaceuticals, foods, fats and oils, synthetic resins and rubbers, synthetic fibres, and petrochemicals are some areas of applications. For further information write to: Filtron Engineers Pvt. Ltd., Gokul, Fergusson Road, Pune, Maharashtra 411 005.
Industrial Products Finder 14, Annual Number 1985, 381

36 Liquid filling machines

Bombay Pharmaceutical Machinery have developed liquid filling machines (vacuumetric/volumetric). These machines are commonly used in industries like pharmaceutical, food cosmetics, perfumery, oil, dairy, and distilleries. These fillers provide accurate and drip-proof filling of a wide range of free flowing liquids (except aerated and carbonated) such as medicines, syrups, hairoils, after shave lotions, shampoos, fruit juices, squashes, ketchups, liquid detergents, ink, etc, into glass bottles, jars, plastic, aluminium or any other rigid containers. Machines are available in two types - Volumetric Positive Fillers,and Vacuumetric Level Fillers. The body of these machines is fabricated from thick quality mild steel plates, duly machined and cladded with stainless steel sheets. These machines can be washed, sterilised with hot water, cold water or steam for maintaining in good hygienic conditions. Each component is well selected after proper testing to withstand various working conditions. The machines are semi-automatic type. Filling range is from 5 ml to 1,000 ml. All motors used are Crompton/Siemens, relay push-buttons are

LT/LK. For further information write to: Bombay Pharmaceutical Machinery, No. 1, Amar Kunj, Peston Sagar, Chembur, Bombay 400 089.
Industrial Products Finder 14(4), 1986, 145

37 Milk filling and sealing machine

Pack Age offer the Milkopack semi-automatic machine for filling milk in polybag and sealing. The machine is easy to clean; and does not need compressor, overhead tank and milk pump. Milk can be poured directly in the machine tank from cans. All contact parts are made from stainless steel 304. The machine features a mild steel body and a stainless steel tank of 55 litres capacity in which the liquid is poured. On the left hand side a bag storage tray is provided. The operator picks up a bag and holds it open under the dispense nozzle of the measuring flack, in which a pair of valves is fitted to measure the correct quantity of liquid. While holding the bag the dispense micro-switch is pressed and the correct quantity of the liquid (as selected) is poured in the bag. The quantity can be selected by setting the switch provided on the programmer. The filled bag is then to be sealed from top on the impulse sealer provided. The operator presses the foot-lever and inserts the top-end between the two sealing jaws. The foot-lever is then to be released to grip the bag and the sealing takes place. In the meantime, the operator picks up another bag and it is filled. The earlier top sealed bag is released from the sealer by pressing the foot lever and the new one is then inserted for sealing. Electronic programmer is provided with proper indicator lamps, fuses, switches, etc. to control the various operations of the machine. The capacity is 500 bags/hour, but due to manual limitation it is 400 bags/hour. For further information write to: Pack Age Systems, 35 B, Parvati Industrial Estate, Pune, Maharashtra 411 009.
Industrial Products Finder, 14, Annual Number, 1985, 610

38 Oxybox for measuring oxygen residue

Oxybox is a paramagnetic oxygen analyser offered for measuring oxygen residue in flexible food packages.

It has been perfected by taking into account the experience acquired from thousands of tests. It involves minimum settings: there is no pump.

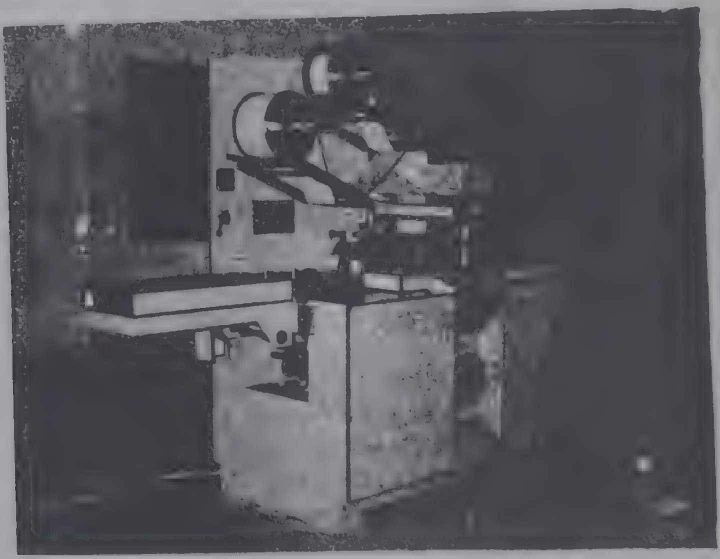
At present it is the only device which allows correction of the error introduced by the addition of CO_2

If extraneous matter is not introduced into the sensor, its utility will be almost permanent. For this sort of measurement, it is necessary to eliminate low priced equipment with electrochemical sensors which are often 'dead' when required. For further details write to: TECHNOVATION, A3, Udyog Sadan 3, Central Road, MIDC Indl. Area, Bombay 400 093.

39 Bag closer with mobile trolley

Shaco Industries have developed bag closer with mobile trolley which has features of static machine operation at any point in the huge godown or warehouse where required. A foot-control mounted switch replaces the finger switch, leaving both the operator's hands free to guide to bag through the sewing machine, ensuring straight sewing line and reducing wear on the stitcher. Complete ease of mobility is ensured by the 12.70 cm diameter rubber tyred wheels. The 'V' base bogie is mounted on rails with a slight gravity fall to assist the passage of the bag through the Shaco sewing unit. Each end section of rail is hinged for ease of mobility and space economy. Adjustment for bag length is made by moving stitcher up or down the vertical column and securing with the clamping handle. With a total weight of 80 kg, the end sections of 'V' base rails fold up to completely to 55.88 cm wide and smooth running rubber tyred wheels enable the unit to be readily moved when required. Feet on rail ends give rigidity when Shaco is being used. For further information write to: Shaco Industries, Rani Building, Opp. Prarthana Samaj, Bombay 400 004.
Industrial Products Finder 14, Annual Number 1985, 601

40 Biscuit/soap wrapping machine



The OW.25 wrapping machine wraps products such as biscuits, soaps, etc. at a speed of 60-70 packets/minute. It uses heat sealable outer wrapper like wax paper. An inner wrapper of wax paper, glassine or BOPP can also be provided. There is a provision for print registration in case of printed outer wrapper. For further information write to: Khosla Engineers, 644 Sector-16, Chandigarh 160 017.
Industrial Products Finder 14, Annual Number, 1985, 312

41 Water filter

Sudarshan Electrical Industries Pvt. Ltd., Thane, have introduced a stainless steel water filter with "medicated" water filter candle/disc. The medicated filter disc removes germs and bacteria, besides mud particles from water, giving bacteria free and odourless drinking water. For further information write to Mohan Ceramics, 123 Jai Gopal Industrial Estate, Bhavani Shankar Cross Road, Dadar, Bombay 400 028.
PFNDAI Newsletter No: 43, 1985, 2

42 Miscella refining plant

VG Engineers Pvt. Ltd. offer a miscella refining plant for refining vegetable oils such as ricebran, cottonseed, soyabean, sunflower, groundnut, etc. Micella refining is the process of refining vegetable oils in hexane medium and the miscella coming from the solvent extraction plant can be directly refined before distillation. This plant can be attached to an existing solvent extcraction plant and the output of the plant will be refined oil of FFA less than 0.25%. Also offered is a special miscella refining plant for cottonseed oil for getting extremely light coloured oil. The miscella refining plant is available in standard capacities of 10T/day, 20T/day, 50T/day of oil refining. The company also offer plant and equipment on turnkey basis for vegetable oil processing, solvent extraction, soap, vanaspati, hydrogenation, fatty acid distillation, fat splitting, soap acidulation to get acid oil, etc. For further information write to: VG Engineers Pvt. Ltd., 3 Deepak Society, Near Amruta Society, Nizampura, Vadodara, Gujarat 390 002.
Industrial Products Finder 14, Annual Number, 1985, 503

43 Chillers recycle extracted heat

Chiller packages, designed to reclaim heat for use elsewhere in a building or industrial process, have been developed by a British manufacturer. With cooling duties ranging from 10 kW to 150 kW, they may be used for chilling water for drinking or process use or for cooling a variety of other fluids.

Reuse of extracted heat can result in substantial savings. When it is not required, a series of dampers built into the package allows the air carrying the heat to be vented outside the building, while air drawn in serves to increase overall ventilation.

Typical applications for the HRWC chiller include the supply of chilled water for bakery dough mixing, hydraulic oil cooling for milling machines, autoclave cooling and carton-packaging equipment for milk or other beverages. The chillers can also be used with nonfreezing solutions to achieve temperatures down to - 30 C.

Each chiller consists of a single package incorporating a coaxial evaporator, water balance/storage tank, recirculating pumps, multistage reciprocating compressors, air-cooled condensers and the appropriate water and refrigeration piping and electrical services. Units can be built to suit most electricity-supply voltages. For further information write to: Watford Refrigeration and Air Conditioning Ltd, Wiggenhall Industrial Estate, Watford, England WD1 8AW.

44 Truck refrigeration system

Globe Auto (Gujarat) Ltd., in technical collaboration with

Scott Air, Inc. of USA, manufacture the Mark Air truck refrigeration system for both low and medium temperature applications. The truck refrigerated units are suitable for the transport of seafood, dairy products, frozen foods, fresh produce and even vaccines and blood. The system is suitable for vans, and small as well as regular size trucks. For further information write to: Globe Auto (Gujarat) Ltd., Transport Airconditioning and Refrigeration Div., "D" Shivsagar Estate, Worli, Bombay 400 018.
Industrial Products Finder, 14, Annual Number, 1985, 659

45 Instant dry ice maker

Iceman is a small compact automatic machine for producing solidified carbon dioxide cakes. It is useful for small batch techniques of freeze drying, microtomy, distillation, etc. Based on the Joule Thomson System, it is easy to operate and dry ice can be made at any moment. A safety look provided prevents opening until pressure is released. Relief valve indicates formation of cake and also releases any excess pressure that may have developed in the unit. The temperature of cake formation is - 81 C and the time of formation of a cake is 30 seconds. For further information write to: Scientific Sales Syndicate, Irani Building, Ground Floor, 303 Cawasji Hormasji Street (Near Marine Lines Church), Bombay 400 002.
Industrial Products Finder 14(3), 1985, 66

46 Rice polisher

The Jet Pearler is a horizontal rice polisher used for secondary polishing of rice unlike the cone polisher which has an abrasive cone for polishing the rice. It is fitted with a hollow metal roll encased in a hexagonal shaped meal-cage lined with slotted and indented screens. A built-in fan blows air through the polishing roll to keep the rice cool thereby reducing the breakage of rice to a minimum. A weighted damper at the outlet controls the degree of polishing. The Jet Pearler imparts to the rice lustrous appearance similar to the huller polished rice, but without increasing the breakage. However, it is recommended for raw rice only as the parboiled rice containing a high percentage of oil in the bran is not suitable for polishing in Jet Pearlers. The machine is available in capacities of 1,200 to 1,700 kg/hour for single milling and 2,000 to 2,800 kg/hour for double milling. For further information write to: G.G.Dandekar Machine Works Ltd., Dandekar Wadi, Bhiwandi, Dist. Thane, Maharashtra 421 302.
Industrial Products Finder 14, Annual Number, 1985, 370

47 Bran finisher

The Shrepak bran finisher is for the scalping of break stock by removing flour from the overtails discharged from a plan sifter. Bran is fed into the finisher and directed into one end of the perforated cylinder. A shaft fitted with horizontal beaters revolves in the cylinder and the beaters release the fine stock adhering to the bran. The shape of the beater blades assists the movement of the stock along the cylinder. As the flour falls from the cylinder peforations into a hopper, the cleaned and polished bran is directed into the overtails stream. The bran finisher recovers flour lost with the bran which gets discharged from the plan sifter. Applications are in flour mills, rice mills and other food powder having bran. For further information write to: Finex Sieves Pvt. Ltd. A-1/606,G.I.D.C. Estate, Makarpura, Vadodara, Gujarat 390 010.
Industrial Products Finder 14, Annual Number, 1985, 454

Husk separator

Dandekar offer a machine for separating rice from dehusked paddy. The paddy shelled in the disc rubber roll sheller is fed to the shaking sieve mounted on top of the husk separator. The sieve enables the shelled paddy to be fed uniformly over the entire width of the husk separator, thereby assisting the complete separation of husk from the mixture of paddy and brown rice. It also recovers the brokens and the husk powder, which otherwise would be blown out with the husk. The sieves are changeable and screens of the desired size can easily be fitted. The husk separator is of wood lined with steel sheets.

The suction is created by single or double aspirating fans. Air control dampers with fine adjustment are provided for regulating the air current. All rotating parts are supported in dust-proof ball bearings. The shaking sieve is counter-balanced for minimum vibration. A secondary aspiration box with reduced air current helps to separate the husk from the brokens. Thus husk separator can be supplied in belt or motor driven type. Capacities ranging from 500 to 3,000 kg/hour. It can also be used in dal mills. For further information write to: G.G. Dandekar Machine Works Ltd., Dandekar Wadi, Bhiwandi, Dist. Thane, Maharashtra 421 302.
Industrial Products Finder 14, Annual Number, 1985, 323.

49 Centrifuge with low-noise

Alfa-Laval has introduced its new-generation, low-noise BRPX 617 centrifuge for beverage, food and other processing industry applications. Designed for continuous clarification purposes, the new separator features increased throughput capacity, more efficient; clarification and better solids handling capacity.

Equipped with a powerful, controlled-torque, low-noise motor, the machine has a maximum throughput capacity of up to 70 000L/h permitting the BRPX 617 to perform a high degree of clarification at flow rates said to be unmatched by competitive equipment. Alfa-Laval's self-triggering system ensures higher separation efficiency and improved process economy, reducing to a minimum the flow of liquid discharged with the solids.

Solids descharge efficiency and reliability is enhanced by a new, integrated operating water system which underwent extensive testing prior to incorporation into the new machine. Three test rigs were employed in the endurance trials for the new operating water system. Each unit performed more than a half million trouble-free solids ejection sequences prior to final production approval. Other improvements inlcude a new paring disc with axial inlet. The clarified liquid leaves the bowl under pressure, eliminating the requirement for a downstream pump.

As a result of thorough design, with noise reduction a major criterion, the noise level for a BRPX 617 is considerably lower than for conventional models. Due to its jacketed bowl casing, smooth flat-belt drive design, enclosed motor and other noise-reducing measures, noise level at normal capacity is only 78 dB(A). The machines are already in operation in several wineries in Australia for the 1985 vintage.

Further details are avialable from the Wine Department. Alfa-Laval Pty. Ltd, 24 Carter Street, Lidcombe, NSW 214.
Food Technology in Australia 37(6), 1985, 237-238

50 RO System for soft drink manufacture

Osmonics, Inc. of USA manufacture an OSMO reverse osmosis (RO) machine to reduce sodium in make-up water to levels which can meet very-low sodium labelling requirements as determined by the FDA. The machine- OSMO/RO 43CHF-SR100K-DLX-produces 100,000 gallons per day of 62 ppm sodium (as ion) water from 735 ppm sodium feed. The machine is easily adaptable in the field to meet the sodium free labelling requirement, if desired. In addition, the RO system reduces total alkalinity or virtually eliminates bacteria and organics. The machine features fail-safe operation, with shutdown alarms and high conductivity alarm on the permeate for guaranteed product water quality. It requires less than 15 minutes a day of operator attention, and even this time can be virtually eliminated by simple addition of an automated flushing system that cleans the membranes automatically. For further information write to: Osmonics, Inc., Osmo Membrane Systems Division, 5951 Clearwater Drive, Minnetonka, MN 55343, USA.

Industrial Products Finder 14, Annual Number, 1985, 477

51 Volumetric oval wheel flowmeter

Toshniwals, in collaboration with Bopp & Reuther of West Germany, manufacture oval wheel flow meters. These flow meters maintain rigid quality control standards. Available in capacities ranging from 12 lit/hr to 20,000 lit/min and for pressures up to 100 kg/cm^2 maintaining a remarkable accuracy of even up to ± 0.1%. These meters come in different configurations with varied materials of construction to suit a wide range of industries which include process industries and thermal stations. The meters are capable of precise volumetric flow measurement of a multitude of fluids like LPG, diesel, furnace, vegetable and other oils, solvents, alcohols, beer, milk, dyes, beverages, polymers, etc, and also in tank/truck loading of fluids. For further information write to: Toshniwal Bros. (Hyd) Pvt Ltd. 268 Kilpauk Garden Road, Madras 600 010

Industrial Products Finder, 14(3), 1985, 37

52 Oilseed flaking mill

UMAS manufacture a heavy duty, large capacity flaking mill for various oilseeds. The all-steel fabricated machine features chilled rolls running in extra large spherical bearings, safety device for non-striking of rolls, roll pressure regulation by oil hydraulic system, electric motor and V-belt drive, differential roll speed, and a geared motor driven feed roll fitted above the machine. The machine is available in capacities up to 200 TPD and different models - UMAS SFR.4 (400 x 1,000 mm), SFR.4(400 x 1,250 mm), SFR.6 (600 x 1,000 mm), and SFR. 6(600 x 1,250 mm). For further details write to: United Oil Machinery and Spares Pvt. Ltd. 704, Chiranjiv Tower, 43, Nehru Place, New Delhi 110 019.

PFNDAI Newsletter No: 43, 1985, 3

53 Chemical resistant coating

ASI offer the Acidcem, an acid and chemical-resistant cement based on technical knowhow from CBRI, Roorkee. The improved formulation of Acidcem conforms to IS:4832, 1969. The Acidcem has high resistance to hydrochloric, nitric, sulphuric and organic acids of all concentrations; salt solutions; aliphatic hydrocarbons; ketones; chlorinated hydrocarbons; fats; or oils. For further information write to: Associated Small Industries, Tijorigali, Siyaganj, Indore, Madhya Pradesh 452 007.
Industrial Products Finder 14, Annual Number, 1985, 429

PACKAGING

54 Fibre drum

AFI offer lightweight, non-corrosive fibre drums to pack basic drugs and chemicals, food products, cattle/poultry feeds/drugs, pesticides and foundry flux, plasticisers and allied chemicals. For further information write to: Atlas Fibrepack Industries, 525/526, Near Grid Station, Industrial Area, Odhav, Ahmedabad, Gujarat 382 415.
Industrial Products Finder 14, Annual Number, 1985, 107

55 Automatic filling machine

Mazda International manufacture a range of automatic bagging and weighing machines. The range finds applications in grains, animal feeds, solvent extration plants, fertilisers, chemicals and many other industries. The machines are designed for automatic filling and weighing of materials from few kilograms to 100 kilograms. The operating principle is that after the operator fixes the bag on the sack chute by the mechanical bag clamping device and then starts the machine for feeding operation. The product to be filled flows from the storage bin into the auxiliary hopper of the machine. The weighing scale consists of an equal armed double beam, balanced on knife edged and V bearings. One end of the beam carries a weight box in which required weights are kept and the other end carries the bag chute to which the empty bag is clamped. When the machine is switched on, the material starts pouring into the bag through the feed gate at very fast speed. When 90% of the material is fed into the bag, the beam tips cutting down the flow of the material to a slow dirbble. When the exact quantity of the product to be weighed fills the bag (equivalent to the counter weights in the weight box) the swing gate completely shuts off any further flow of material into the bag. Alternate models for those requiring nett weighing

also available. These are suitable for tins and drums also. The filling capacity varies from 2 fills per minute to 15 fills per minute depending upon the product and the model. The weight variation is between ± 0.25 to 0.5% maximum. Also offered are belt conveyor system, screw or slat conveyor systems, bucket elevators, vibratory screws, magnetic separators, portable stackers, etc. For further information write to: Mazda International Private Ltd., 79(1), World Trade Centre, Cuffee Parade, Colaba, Bombay 400 005.
Industrial Products Finder 14, Annual Nmber, 1985, 480

ANALYSIS

56 Portable grain forage moisture tester

Dickey-John Corporation of USA manufacture an instrument that measures percentage moisture content in grains, seeds, and forage automatically to an accuracy of 0.5%. The sample need not be preweighed. As soon as the sample is poured into the cell the testing sequence begins. A digital readout is displayed when the proper weight of the sample enters the test cell. The readout is corrected for temperature at the touch of a pressure-sensitive switch. The grain tester weighs about 1.0 kg and is used for rice, wheat, soybeans peanuts, rape, corn, etc. The forage tester weighs about 1.6 kg and is employed for hay, tobacco, tea, and other compressive materials. All testers operate on 9 V battery with auto power off. For further information write to: P.S. Lunkad & Sons Pvt. Ltd., 99, Old Prabhadevi Road, Bombay 400 025.
Industrial Products Finder 14, Annual Number, 1985, 62

57 Meat analysis in nine minutes

The CEM meat analysis system provides an extremely accurate moisture and fat result in 9 min for a single sample and 6 min for consecutive samples, without the need for constant recalibration.

It has been approved by the US Association of Official Analytical Chemists for meat raw materials (fresh and frozen), for blends and emulsions (in process monitoring) and for finishing products with and without extenders.

It consists of two instruments. The first is the moisture/solids analyser AVC-80 for measurement of moisture by rapid accurate drying. This consists of an electronic balance in a drying cabinet, a microwave drying system and a microprocessor with digital readout.

The second instrument is the fat extraction unit which consists of an automatic extraction system and a solvent recovery system.

The 5g meat sample is placed on the balance pan in the cabinet, the door is closed, and the appropriate key touched on the control panel. The initial sample weight is stored in the memory and at the end of the drying time the final weight, weight loss and per cent picture are displayed on the digital display. For fat, determination, the dried sample is removed from the analyser and placed in the fat extraction unit which agitates it in the solvent. The undissolved material (i.e. non fat) is collected on a filter pad, which is removed for weighing in the AVC-80

Food Manufacture 60(7), 1985, 31, 33

COMMERCIAL INTELLIGENCE

PRODUCTION (RAW MATERIAL)

58 All-India crop estimate for 1983-84

Crop	Area (Hectares)	Production (Tonnes)
Jowar	1,62,64,049	1,19,43,470
Maize	58,49,107	78,78,679
Gram	73,18,353	47,91,065
Chillies, dry	8,07,773	5,53,228
Turmeric	87,914	1,96,485

Agricultural Situation in India, August, 1985, 465-480, September, 1985, 579-585

59 Area, Production and Productivity of Mangoes in India, 1975-76 to 1982-83

Year	Area (000 ha.)	Production ('000 tonnes)	Productivity (tonnes/ha)
1980-81	979.64	8,515.71	8.69
1981-82	1,001.54	8,662.81	8.65
1982-83	1,022.22	8,833.80	8.64

Agricultural Situation in India September 1985, 513

60 Estimated Area and Production of Fruit Crops in India during 1982-83

Name of the crop	Area		Production	
	Quantity ('000 ha)	% to total quantity	Quantity ('000 tonnes)	% to total quantity
Mango	1,022.22	40.05	8,833.80	38.98
Banana	317.60	12.45	3,608.03	24.75
Citrus	234.57	9.19	1,807.89	7.98
Guava	155.78	6.10	1,350.40	5.96
Apple	161.71	6.34	966.60	4.26
Pineapple	87.20	3.42	671.82	2.96
Grapes	12.05	0.47	237.02	1.05
Other fruits	560.88	21.98	3,185.87	14.06
Total	2,552.01	100.00	22,661.43	100.00

Agricultural Situation in India September 1985, 510

PRODUCTION (INDUSTRIAL)

61 Sugar production

According to the Indian Sugar Mills Association, sugar production during the first fortnight of January 1986 (i.e. 1.1.86 to 15.1.86) was about 7,00,00 tonnes as against 6,52,000 tonnes during the corresponding period last year.

The total closing stock of sugar as on 15th January, 1986, was 26,56,000 tonnes (including 1,31,000 tonnes of imported

sugar) as against 27,12,000 tonnes (including 1,51,000 tonnes of imported sugar) on the same date last season.
Indian Sugar Mills Association Press Release, 14 February 1986

EXPORT

62 Rice export

The Government has decided to permit the export of non-Basmati rice with immediate effect.

A minimum export price of Rs. 4,000 a tonne f.o.b. has been fixed against 100 per cent confirmed, irrevocable letters of credit, according to an official release.
The Hindu, 20 February 1986, 9

63 Marine products exports

Exports of marine products from India have shown an increase both in terms of volume and value during the first half of the current year, 1985-86.

These exports rose to 37,213 tonnes valued at Rs. 177.70 crores in April-September 85 from 36,666 tonnes valued at Rs. 170.31 crores in the corresponding period last year. The unit value realisation has also registered a marginal increase from Rs. 46.45 to 47.75 a kg.

According to an official release, frozen shrimp continued to be the major item of the exports accounting for about 63.10 per cent of the total in terms of quantity and 85 per cent in terms of value.

Quantity wise there was a fall from 25,134 tonnes in April-September 1984 to 23,483 tonnes for the same period this year. But there was a significant rise in unit value realisation and total earnings amounted to Rs. 151 crores (Rs. 149.20 crores).

Exports of frozen lobster tails nearly doubled from 347 tonnes to 641 tonnes.

The exports of frozen cutterfish have registered nearly a four fold rise to 1,486 tonnes (381 tonnes). The cutterfish season was good during the current year which contributed significantly to the export increase. Japan continued to be the main market for this item.

The exports of frozen squids rose to an all-time high of 2601 tonnes valued at Rs. 325.95 lakhs against 1,025 tonnes valued at Rs. 197.01 lakhs. The exports were mainly to France, Greece and Spain.

The shipments of fresh frozen fish also recorded an increase. For the first time, appreciable quantities of individually quick frozen (IQF) shrimps were exported from India to the West European markets.

The shipments of accelerated freeze dried (AFD) shrimp, a recently added high-value export item registered an increase of the order of 25 per cent both in terms of quantity and value.

Japan and the US continued to be the major markets for the Indian marine products.
The Hindu, 26 December 1985, 13

64 Lobster tails

The export of lobster tails from India has crossed 1,000 tonnes mark for the first time by touching a record figure of 1,082 tonnes in 1984-85 as against 648 tonnes in 1983-84. Foreign exchange earnings have also shown a substantial increase with a record figure of Rs.7.89 crores compared to Rs. 5.15 crores in the previous year. The exports during 1984-85 have represented a growth of 66.98% in volume and 53.20% in value over the performance in the previous year.

Japan and USA are the major markets for this item. The increased off-take of cooked whole lobsters to Japan is the major reason for the hike in our exports.
Export Gazette 30(9), 1985, 28

65 Frozen shrimp

The exports of frozen shrimp from India touched a new peak during 1984-85 at 55,398 tonnes valued Rs. 329.70 crores. The previous record was in 1982-83 when frozen shrimp exports reached the level of 55,002 tonnes valued Rs. 316.15 crores

The unit value ralisation has also touched an all time record level of Rs. 59.5 per kg. during 1984-85.
Export Gazette 30(9), 1985, 28

66 Cashew exports

India's export of cashew kernels during January-July 1985 totalled 21,206 tonnes valued at Rs. 1150.6 million as against 16,533 tonnes valued at Rs. 935.9 million during the corresponding period in 1984, registering an increase of 28.11 per cent in quantity and 22.95 per cent in terms of value.

USA emerged as the biggest importer of cashew kernels from India with imports of 10,488 tonnes in January-July 1985 as against 8,541 tonnes during the same period in 1984. USSR was the second largest importer with imports of 2,504 tonnes cashew kernels as compared to only 10 tonnes during the periods under review. Netherlands with imports of 2,287 tonnes cashew kernels was another big importer followed by Japan with 1,429 tonnes. Other countries to which India's cashew kernels exports were directed included Australia (871 tonnes), U.K. (726 tonnes), Singapore (534 tonnes), Hong Kong (500 tonnes), UAE (345 tonnes), Federal Republic of Germany (284 tonnes), Canada (271 tonnes), Saudi Arabia (258 tonnes), Kuwait (206 tonnes) and New Zealand (112 tonnes).

Japan topped the list with imports of 406 tonnes of cashewnut shell liquid during January-July 1985. Republic of Korea followed with imports of 224 tonnes. Other countries importing cashewnut shell liquid include Federal Republic of Germany and Czechoslovakia.
Economic and Commercial News 15(46), 1985, 8-9

67 Major markets to which Mango and its products are exported from India.

Product	Major Markets Based on quantity exported
1. Mangoes fresh	(1) U.A.E. (55.95, (2) Kuwait (14.60), (3) USSR (6.76), (4) Saudi Arabia (5.99), (5), U.K. (3.60)
2. Mangoes slice	(1) UK (17.85), (2) Hongkong (15.06), (3) Bangladesh (14.51), (4) Kuwait (9.89), (5) Canada (6.63)
3. Puree and paste of mango	(1) Saudi Arabia (19.80), (2) USSR (16.25), (3) Netherlands (14.57), Nigeria (12.04)
4. Mango juice	(1) USSR (42.86), (2) UK (39.04) (3) Yemen Arab Republic (5.10), (4) Ethiopia (1.99), (5) USA (1.90) (6) U Arab Emts. (1.43)
5. Mango slice brine	(1) UK (37.04), (2) Iraq (34.18), (3) USA (7.85), (4) USSR (5.63), (5) F.R.G.(4.68)
6. Mango squashes	(1) USA (89.92), (2) Canada (10.08)

Agricultural Situation in India September 1985, 512

68 Bank commission on export goods

The Reserve Bank of India has delegated powers to authorised foreign exchange dealers (Commercial banks) to permit payment of agency commission for overseas parties. The maximum

commission has been fixed at 10 percent for select items of export such as engineering goods and five percent for non-select items such as traditional goods like textiles.
Cashew Bulletin 22(10), 1985, 9

69 Credit cards to exporters

In order to avoid procedural wrangle, the Federation of Indian Export Organisations has proposed to the Reserve Bank of India to issue International credit cards to exporters against blanket permits. According to FIEO, the RBI has agreed to examine the proposal. Such a card will be of great help to exporters in solving their foreign exchange problems, especially those who have to go abroad frequently. It has also been suggested that the blanket permit presently being issued for three years . And such permits may be allowed to be used for sending abroad representatives of manufacturers on export promotion visits. According to the FIEO, the RBI has agreed to consider this proposal and also that the exporters are allowed to apply for renewal of blanket exchange permits after utilising 90% of the existing permit. The RBI representative assured exporters that blanket permits would be issued within seven days, if all the documents were complete.
Spices News Letter 19(10), 1985, 7

TRADE INFORMATION

70 National income up by 3.5 pc

India's national income during 1984-85 at constant prices (1970-71 base) registered a growth fo 3.5 per cent, thus bringing the average annual growth in real national income for the Sixth Plan period to 5.3 per cent.

According to the quick estimates of national income and related aggregates for the financial year 1984-85, released by the Central Statistical Organisation today, the total national income during the year at constant prices is estimated at Rs. 57,014 crore as against Rs. 55,100 crore in 1983-84, showing a rise of 3.5 per cent against 7.8 per cent during the previous year.

At current prices, the national income in 1984-85 works out to Rs. 1,73,207 crore compared with Rs. 1,57,830 crore in 1983-84. This increase of 9.7 per cent at current prices takes into account the implicit price rise of about 6.1 per cent during 1984-85.

The net national product (NNP) at factor cost for the first three years of the Sixth Plan was: 7.8 per cent for 1980-81, 4.5 per cent for 1981-82 and 1.6 per cent for 1982-83. The NNP during 1980-81 was high because the national income had declined by 5.5 per cent during the previous year.

The per capita income in real terms is estimated at Rs. 772 for 1984-85 as against Rs. 761 in 1983-84, registering an increase of 1.4 per cent during 1984-85. The per capita income at current prices works out to Rs. 2,344 in 1984-85 as against Rs. 2,180 during the previous year.
The Economic Times, 29 January 1986, 1

71 Technology cell constituted by Trade Development Authority

The Trade Development Authority, New Delhi has set up a Technology Cell to promote technical collaboration between Indian firms and overseas entrepreneurs for strengthening export production base. The another objective of the Cell is to offer guidance and advice to the foreign entrepreneurs in setting up joint ventures in India with 'buy-back' arrangements. This Cell is already operating in full swing and at present there are 93 proposals under negotiation between Indian parties and their overseas counterparts. It is reported that a couple of the proposals have already matured into firm agreements.

Manufacturer-exporters may avail of TDA's services in this regard. Please contact the Trade Development Authority, Bank of Baroda Bldg. 16 Sansad Marg, P.O. Box No. 767, New Delhi 110 001 in this regard.
Spices Newsletter 19(10), 1985, 6

72 Decline in home baking

Home baking continues to decrease, according to market research recently quoted in the Wall Street Journal. During any two-week period in 1984, only 41% of the families surveyed baked a pie, cake, or cookies at home. In a similar survey in 1981, that number was 56%. This result is not surprising in terms of the rapidly changing demographics of the U.S.population. With the majority of women today employed outside the home, the urge to "bake something special for the family" more often gives way to "heat something up in the microwave". This trend is supported by the increasing number of complete entrees being offered in the supermarkets, and is reflected by the 5-7% a year decrease in sales of family flour from supermarket shelves.
Cereal Foods World Nov. 1985, 809

73 Agencies wanted

Samuel Akonor Obuobisah, S.A. Obuobisah Agencies, P.O. Box 1656, Kumasi-Ashanti. Importers of canned food, fish, meat, vegetables and fruits, dairy products.

Tosa (Nig) Enterprises, 8. Onibudo Street, Oko-Awo, Lagos State. Importers of food stuff, milk, sugar, tea.
Export Gazette 30(7), 1985, 12

74 Trade Enquiries

First Trading Co.
601 Albion Plaza
2-6 Granville Road
Tsimshatsui
Hongkong

Cashewnuts

KoonWah Mirror Group
809-813 Houston Centre
63 Mody Road
Tsimshatsui

Glass & marine frozen foods

Geniexs Company
P.O. Box 279
Toa Payoh Central
Singapore 9131
Cable: CROSSROADS
Attn:Mr. P.M. Tan

Garlic powder and onion powder

Ben Co. Ltd
230-B Pandan Loop
Singapore 0512
Attn: Miss Han Chin Nee

Frozen beef

Arcade Store (Pte) Ltd
97 Market Street
06-02, Fidvi Building
Singapore
Attn: Ali Alkaff

Canned mango juice

Panseas Enterprise
15 Jalan Tepong
Jurong
Singapore 2261

Frozen crab meat

Foreign Trade Bulletin 16(4), 1985, 10-11

75 Trade enquiries

Spyer, van der Vijver and Zwanenburg BV
Post bus 27,
4870 AA Etten-Leur, (Netherlands)

Tropical fruits and fruit pulp

H.A.S. & Son,
5, Orange Market
Colombo-11
Sri Lanka

The firm desires to import red apples.

Lucky birds Enterprises Co. Ltd.,
2nd floor, No. 13, Section 2
Chungyang South Road
Peltou (Taiwan)
Telex: 25953 LAKI

Foodstuffs dried fruits, Walnuts

Phone: 891 5145 to g T.M. Yank	
Mavrika Imports S.A., 19, Zodohou Pigis Street Piraeus (Greece) Tel: 4521202 Tlx: 213502	Curry powder and mango chutney
Reliance Enterprise, P.O. Box 1127, Port Louis, Mauritius	Foodstuff
Victor Warne and Co. (HK) Ltd. 49 Austin Rd. 10/Fl. Hong Kong.	Fresh fruits.
Frederick Porders and Co. Ltd. 65 Wong Chuk Hang Rd., Gee Chang Hong Centre 7/Fl. Aberdeen Hongkong.	Foodstuffs, dried morels
Waleed and El Wahab, 12, Shoubra Street, Caior. (Egypt)	Food stuffs
Golden Universe Import-Export(M) Sdn.Bhd., 19A, Jalan 54, Wisma Yik Man Desa Jaha, Kepong, Selangor, Malaysia	Tamarind in powder
Zukmad Trading Co. 86, Jalan Patung Pinang, Balek Assam, Taiping Perak, Malaysia	Food products
Mr. Grimaldi Ivano Via A. Robino 55/a 15142 Genova (Italy)	Beer
Aram s.p.a. Via Goldoni 2, Parma (Italy)	Sweet foods
Sathea Via Dolomiti 39 20127 Milano (Italy)	Peanuts
Camera di Commercio Reparto III Pisa (Italy)	Food products

India Exports Newsletter 8(7-8), 1985, 35-36

FOOD REGULATION, QUALITY CONTROL AND HYGIENE

6 Ban on captan

All food uses of captan, a fungicide widely used on fruit and vegetable crops for more than 30 years, have been banned by the Environmental Protection Agency. The agency has concluded, after reviewing the safety of the material for five years, that captan poses an unreasonable risk of cancer to workers and to persons eating food containing captan residues. The EPA estimates that a person who eats foods containing captan residues for a lifetime runs a risk as high as one in 1,000 of getting cancer from the exposure. This risk level is nearly as high as that estimated for ethylene dibromide, which was banned last year.
Cereal Foods World October 1985, 741

77 Food regulations in Dubai

Chemical and microbiological standards have been applied by the Dubai Municipality based on the international standards laid down by the Codex Alimentarius Commission Joint FAO/WHO Food Standards Programme.

The determination of shelf life of a product is at present left to the discretion of the manufacturer or supplier with exceptions listed below. In deciding the life and thereby the expiry date of a product the manufacturer is advised to take into account the type and properties of the foodstuffs, the packaging, the climatic conditions which prevail in this area and the potentially adverse conditions under which the food may be stored.

It is advised that the life of all products may be restricted to the minimum practicable with marketing requirements to avoid prolonged storage, including those products which under optimum conditions of storage and temperature control would be expected to have a life of many years.

The foodstuffs which have a restricted shelf life at present are:

- Canned tomato paste (one year)
- Chilled vacuum packed meat (three months)
- Frozen meat (one year)
- Fresh milk (five days)
- Infant milk formula (eighteen months)

Salt, Sugar, Dates, Spices, Cereals, have been exempted from date marking requirements with the provisions that they are not processed with the addition of any chemicals.
Cashew Bulletin 22(10), 1985, 4

TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES

Nil.

PERSONALIA

Nil.

RAW MATERIALS

78 Paddy straw mushroom

Oyster mushroom is best suited for paddy growing areas of Karnataka, Orissa, West Bengal and Maharashtra. They thrive well on temperatures ranging between 70 and 100F with 65 to 80 per cent humidity.

Paddy straw is cut into small bits (1 to 3 cm length) and soaked in water for 24 hours. Excess water is drained off. The straw is then spread over platforms in three layers each of 2.5 cm. thickness. Arhar powder (250 g) is broadcast over each layer on which spawn (seed of mushroom) is sprinkled. Then the straw is covered with polythene. It is watered once in four days.

After 10-15 days mushrooms begin to appear. For proper aeration the polythene cover is removed and mushrooms are allowed to grow for the next 12-15 days and then cut with sharp knife without disturbing the bed of immature mushrooms. Mushrooms are highly perishable and hence are consumed on the day of harvest or stored in refrigerated condition. Eight crops of mushroom can be successfully cultivated in a year. For further information contact: Tamilnadu Agricultural University, Coimbatore, Tamilnadu 641003.
Documentation Bulletin, No.62, 1986, 15

STORAGE AND INFESTATION CONTROL

79 Electrocution of insects

The most dangerous menace faced by any food processing industry or retailer of food products, hotel or restaurant is of flying insects. They not only contaminate the food products but also cause diseases among the people working in such places. The insect-o-cutor Ltd. of England has come out with a solution for this problem. Their insect-o-cutor, flying insect control system fulfills an important role in dealing with flying insects and the diseases and contamination which they spread.

It is a scientific fact that virtually all flying insects are irresistibly attracted by a certain wavelengths of light known as near-ultraviolet light. The insect-o-cutor uses special fluorescent tubes emitting this light and an electrified grid, beneath which is a tray. Fixed in a position and a height, the insect-o-cutor attracts flying insects from a wide area, kills them when they touch or come close to the electrified grid, collects them safely and cleanly in a tray beneath the unit.

The component electrical parts, specially developed and manufactured, ensure that the grid can discharge the high voltage necessary but at low current which is harmless to all humans. The glass used to make the tubes will not pass radiation which is in any way injurious to human health.

Even though the company recommends the system to be switched on for 24 hours a day it only consumes from 22 to 44 watts - less than a small light bulb. In some applications, it may also serve as a night security light and is visible sign to the clients of the interest of the enterprise for hygiene.
Asia-Pacific Tech Monitor, January-February 1986, 45-46

FOOD ADDITIVES

80 Dried cream extract

This new flavour is produced from fresh cream by hydrolyzing the butter fat to liberate free fatty acids. These are encapsulated in a concentrated, water-soluble powder. The concentration of this product is such that 1 lb has the flavour strength of about 80 quarts of cream. Needing no refrigeration, it can be stored at room temperature for up to one year. It can be used as an additive to enrich and improve the quality of all types of product, or as a replacement for butter, cream or fats. Contact Dietary Foods Ltd of Cumberland House, Brook Street, Soham, Cambridgeshire CB7 5BA.
Food Trade Review, November 1985, 558

81 Fruit drink enhancer bases

These are blended to impart a fruit juice flavor to fruit drinks with a high juice content. Added at a level of 1.0-2.0% of the total drink formula, Fruit Drink Enhancer Bases improve a drink's flavor and colour. The bases are available in a variety of flavors, with or without preservatives and with or without artificial colors and flavors. For more information, write to Southland Food Labs, 2841 Pierce St., Dallas, TX 75233.
Food Technology, December, 1985, 86

PROCESSES

32 Pickle from blood clam

Pickling has so far been one of the easiest and efficient methods available only for preserving vegetables and fruits. Indian pickles are famous throughout the world since ages. Pickles have been made out of almost all and any kind of vegetable grown in the country. One more delicacy is going to be added to the list very soon. This time, it is a non-vegetarian pickle made from blood clam meat.

In a number of southeast Asian countries blood clam (Andra granosa) is fished and utilized as food. It is also cultured in China, Japan, the Philippines, Thailand, Indonesia and Malaysia. Along the Indian coasts this species occur at a number of places and forms a fishery of considerable magnitude in the Kakinada Bay, where an estimated 1000 tonnes are landed annually. The present practice in this region to burn the cockle shell with the meat intact to produce lime, thus destroying the valuable protein. The cooked cockle meat has good meaty texture, attractive sweetish taste, good flavour and pink colour. In an attempt to popularize the cockle meat among the local population, a recipe for making cockle meat pickle was developed at the Central Institute of Fisheries Technology, Kakinada.

Live cockles are collected and stored in clean seawater for 16-24 hours. They are thoroughly washed thrice with chlorinated tapwater and are shucked. After removing the intestine, the meat is washed three times with potable water. It is then blanched in 6 per cent boiling brine for 5 minutes. The blanched meat is drained well on a perforated vessel and then fried in gingelly oil until brown in colour.

The required quantities of spices and other ingredients except pepper, turmeric, chilly, mustard, salt and vinegar are fried together in refined groundnut oil for 2-3 minutes. At this stage, pepper, turmeric, chilly and skinned mustard are added and fried for about 30 seconds. All the powdered spices are made into a thick paste by adding water and stored for 15 minutes before use. The required amount of salt is added and the mixture boiled.

The fried meat is then added to the above mixture and stirred for a few seconds. The pan is then removed from the flame and the ingredients mixed thoroughly for 2 to 3 minutes and then cooled. When sufficiently cooled, vinegar is added and mixed thoroughly. It is then packed in pasteurized glass screw-cap bottles and stored at room temperature.

Initially the texture of the pickle will be very tough but with aging it becomes softer. The flavour also improves considerably after one month aging. The pickle could be stored at

room temperature in a very good acceptable condition up to five and half months.
Asia Pacific Tech Monitor, January-February 1986, 39-40

83 Longer life for chilled meat

An experimental rapid-chill technique may allow meat to be chilled, packaged and shipped the day an animal is slaughtered.

Research into the technique, called hydrochilling, is being carried out by the United States Department of Agriculture in Texas. It involves spraying the meat with refrigerant solution at -15°C.

This contrasts with conventional techniques of air-chilling carcasses in refrigerated rooms for 24 hours or more.

Hydrochilling reduces the amount of meat shrinkage and lengthens the shelflife of meat by reducing chances for bacterial growth, the USDA says.

For the US, extending shelf life another 15 to 20 days would make it possible to sell fresh variety meats, such as liver, hearts, kidneys and tongues, in Europe, where they command a premium price.

The department says propylene glycol, one of the most promising solutions used in the hydrochilling experiment, is approved for use on vacuum packaged meats but not for direct contact with meat.
Food Technology in New Zealand, October 1985, 15

84 Sun-drying of bananas

The high costs of fuel and electricity needed for conventional methods of drying bananas, such as forced air drying, is eliminated by the use of solar energy. A solar drying process for bananas has been developed at the Totokoitu Research Station of Cook Islands which has been adopted in a commercial banana drying enterprise on Aitutaki.

The design of the unit was based on the following criteria: (a) to obtain maximum use of solar heat; (b) to provide movement of air over the bananas; and (c) to protect them from rain. The drying cabinet has a timber frame 1.8 metres long, 1.4 metres wide and one metre high at the back sloping to 25 cm at the front. Solid timber doors are hung at the rear to permit easy loading and unloading of trays of fruit. The unit is clad in UV-resistant clear polythene. Black polythene is stapled over the floor and the inside of the doors. Internal rails support the drying trays. The area of each tray, made of wooden slats, is 75 square cm.

The hinged flaps made from 15 cm wide boards, fitted to the front panel and a panel above the doors at the back and running the length of the cabinet provide ventilation control. The openings are covered with mosquito netting to exclude flies. Permanent ventilation is provided by 2.5 cm holes drilled at 15 cm intervals in the flaps. The cabinet is mounted on one metre high wooden posts, around which aluminium strips have been tacked, to prevent the entry of rats and mice. The unit is left in the open with sloping face to the north.
PTI Science Service, 5(9), 1986, 27-28

85 New technique for preserving fruits and vegetables

Thanks to a new, completely natural process, fruits and vegetables having a high sugar content, such as prunes, carots, bananas, etc., can be preserved for periods of two to six years, without experiencing the slightest deterioration in their quality.

This technique, developed by a French company, offers clear advantages over traditional dehydration methods. The degree of biological purity attained through the use of this method is extremely high, namely 100 germs per gram, as compared with 8,000 found in the case of sterilized milk using ultra-high temperature techniques. What is more, this new procedure is much less costly.

The new PHINE process eliminates the rehydration phase of the cycle. The fruit is exposed to varying temperatures which never exceed 75 C. Each step has been pre-determined after careful analysis of the product's sugar content and other components. The cycle is stopped when the residual degree of humidity reaches a level of 35%. While the pH of fresh fruit is usually between 5.5 and 5.9, fruits treated by the PHINE process rarely surpass the level of 4. This is an important threshold, and yeast and moulds cannot develop at this pH level.

The principle behind the PHINE process is based on complex notions of organic chemistry. In simple terms, the heat provides the energy necessary for an architectural reorganization of the sugar molecules of the fruit. The product is "stabilized" at a particular balanced level that can only be destroyed by temperatures lower than - 20 C or greater than 72 C. Moreover, bacteria undergo a sort of "cleaning" and desporulation. Enzyme chains are inactivated.

During the last step of the process, water is trapped inside the fruit, enmeshed between water and sugar molecules. This blocking of an active transfer of the water molecules of one milieu to another has found numerous and important use in the production of a whole line of new, composed food products, such as biscuits, chocolate bars, break fast cereals, fruit yoghurts, dietetic products etc.

The new PHINE technique preserves the original taste of the fruit as well as their fresh appearance. When exposed to the open air, they can last for up to six months.
PTI Science Service, 5(8), 1986, 29

86 Microwave speeds flash tempering

Flash tempering frozen blocks of eggs, meat, butter or other frozen blocks in seconds or minutes, not hours, is now possible with a new batch-type microwave unit. It is designed and made by Microdry Corporation.

A large pasta maker reports that it allows them to temper 30 pound blocks of frozen eggs in 80 seconds instead of 6-8 hours. This brings the yolks to 32 - 33 F for immediate use.

Scheduling and inventory are simplified.

It eliminates bacterial deterioration.

Fifty pound blocks of frozen meat are tempered in six minutes plus a short equilibration time. The usual 5% drip loss with room temperature tempering is eliminated. For further information contact: Microdry Corporation, 3111 Fostoria Way, San Ramon, California 94583.
Food in Canada, February 1986, 50

87 Yeast to prevent water pollution

A private company of engineers has developed a system to treat waste water of various types of process plants, including yeast, when the effluent cannot be treated by a biological process alone.

This is a biophysical process known as the powdered activated carbon treatment (PACT) process. PACT combines the physical process of adsorption with the biological treatment of the effluent in a single step.

The waste water is first treated in an aeration chamber with the help of a biomass, whose bacteria "chew" the organic material in the effluent, reducing the toxicity.

Excess toxic load, measured by the effluent's chemical oxygen demand (COD) and biological oxygen demand (BOD), is handled through adsorption by powdered activated carbon which is introduced into the chamber simultanesouly with the biomass.

The treated waste water is pumped into a clarifier equipped with a rake mechanism which separates the contaminated carbon from the now harmless waste water, which is pumped out.

The contaminated carbon, known as spent carbon, is finally sent to an aerobic digester tank equipped with an aeration grid. By continuous aeration with the help of an air blower, the solid waste is detoxified, and then discharged.

The yeast produced from molasses by fermentation is supplied to bakeries and breweries whose waste water is highly toxic and cannot be treated by conventional biological process.
PTI Science Service, 5(5), 1986, 3

38 New taste for instant coffee

Maxwell House instant coffee is taking on a new and richer taste as the result of months of trials and consumer testing by its manufacturer, Cottee's Foods, a division of Cadbury Schweppes. Cottee's has upgraded the quality of the coffee bean used and has also introduced a new manufacturing technique to retain the full aroma of the coffee beans. The new product is being made exclusively from high mountain-grown South American beans. Cottee's assessed more than 100 different coffees from 12 countries and undertook trials with blends and consumer tests of more than 1000 coffee drinkers to complete their studies.
Food Technology in Australia, 37(8), 1985, 342

89 Microwave cooking of snackfoods

In the preparation of starch-based snackfoods, microwave heating now offers an alternative to traditional deep frying techniques. The development of a pilot plant by Magnetronics Ltd of Leicester, has now made it possible for manufacturers to offer a more healthy product without the need for a large scale, high energy, processing plant, they tell us.

In recent years, expanded granular and potato starches have been used to produce new snackfoods with a light texture. Producing this texture relies on the ability to create around a 500 per cent expansion on cooking. This massive expansion is normally created by deep frying, where any moisture retained by the starch (usually about 10 percent) is vaporised on coming into contact with the hot oil.

As a production process, deep frying suffers from a number of drawbacks. Increased awareness of health hazards is creating a resistance of foods containing a high proportion of fat, and starch products typically retain around 30 percent. Continuous processing plants not only represent a large capital investment but are expensive to run in terms of energy and oil consumpion.

Using microwave energy, Magnetronics' plant could offer a solution to these problems. Since the product is completely free of oil, it should be more healthy. The absence of oil also increases shelf life, particularly in hot climates. On the production side, the process can be controlled very accurately to induce the desired characteristics. The plant itself is compact, simple and safe to operate, using a conveyor to feed

the raw product through the cooking chamber.
Food Trade Review, November 1985, 555

90 Concentration of wines by reverse osmosis

IRCHA (Institut national de recherche chimique appliquee) has obtained a selective membrane capable of retaining alcohol. It is a reticulated polyacrylamide film which renders it selective. It is fixed on a microporous layer of polysulfone. The mechanical resistance of the membrane is assured by a "non-woven" layer of polyester or polypropylene.

This membrane, mounted on a reveser osmosis apparatus working between 60 to 80 bars can concentate the wines by increasing the alcohol content from 1 to 4 degrees. Practically nothing else but water, methanol and part of free SO_2 pass through this membrane. Tests carried out by Dr.G.Moulin of ENSA show that legally permitted concentration of 2 degrees by reverse osmosis followed by precipitation of tartar when cooled, leads to improved product quality, obtaining a balanced wine and concentration of the constituents of the bouquet. Thus blending with the foreign high alcohol content wines can be avoided. This process patented by IRCHA is available for licencing.
PTI Science Service, 5(6), 1986, 25

91 Mango wine soon

Mango wine will soon be the favourite beverage of all. Out of the 23 odd varieties researchers at the Central Institute of Horticulture for Northern Plains (CIHNP), Lucknow have found that 'Langra' was the best suited.

Similarly, varieties of "Fajli", "Langra", "Chausa" and "Dussehri" were suitable for sweet dessert and 'vadeira' style wines, a spokesman of the institute said.

Out of the different mango varieties tested so far, researches indicate that 'Langra' was by and large the best for dessert wine and "Totapari" for Madeira.

The spokesman said due to the deficiency noted in some mango wines "madeiristion" was attempted and the product was therefore known as "Madeira, style mango wine".

Wines like Madiera, Masala, Sweet Sherry and some dry sherry in Portugal, Italy and California were also heated at some stage of processing.

It has also been seen that sweet fortified wine made from Dussehri variety contained 15.2 per cent alcohol while dry wine without fortification contained only 8.5 per cent alcohol.
PTI Science Service, 5(7), 1986, 8

BY-PRODUCTS AND WASTE UTILIZATION

-Nil-

PROCESSED PRODUCTS

92 Natural shrimp powder

Cade-Grayson Co of PO Box 1955, Vista, California 92083, USA, has introduced an all-natural shrimp powder. The new shrimp powder is air dehydrated at low heat and is totally natural in flavour and colour. This product is produced from completely natural ingredients with no additives, carrying agents (eg. dextrins), MSG, salt or artifical flavourings.
Food Trade Review, September 1985, 457

EQUIPMENT AND MACHINERY

93 Measuring liquid level from outside

A new portable level detector that measures the level of liquids from outside process vessels and tank cars is developed by Fisher Controls Internationals (Marshalltown, Lowa).

The instrument is designed to give an accurate indication of all hydrogen-containing materials such as water, acids and bases, and most organic liquids.

The detector uses a sealed radioisotope source emitting fast neutrons that can penetrate the wall of an enclosed vessel. When the fast neutrons encounter hydrogen atoms, they lose energy and some are reflected out of the vessel as slow neutrons. The detector is sensitive to the slow neutrons, and the signal it generates is proportional to the hydrogen content of the measured substance. The $4,950 unit can penetrate vessel walls up to 6 in. thick and can detect levels in vessels 2 in. or more in diameter.
PTI Science Service, 5(8), 1986, 24

94 High pressure water pump/valves

Oilgear have developed a range of high pressure water pumps capable of developing pressure from 200 to 15,000 PSI.

The pump can be used for jetting boilers, tank cleaning, pipelines, and heat exchanger tubes; hydro testing cylinders, valves, tanks and vessels; and pressure cleaning dairy equipment, food processing vehicles, etc. Also available are high pressure water powerpacks - up to 15,000 PSI - with control, relief, check and non-return valves. For further information contact: Dilgear Company, 147-B, Sheed Bhagat Singh Colony, Kurla Road, Andheri (East), Bombay-400 059.
PFNDAI Newsletter, No.6, 1986, 1

95 New evaporator type for the fruit juice industry

A newly developed plate evaporator avoids the disadvantages of the conventional plate evaporators. This evaporator type, Sigmastar, incorporates the advantages of a tube evaporator as well as those of a plate evaporator. Its outstanding characteristics are good product distribution, small pressure drops and application for highly viscous products. In addition, a new stage sequence has been developed for the aroma recovery, a maximum aroma recovery is obtained at lowest evaporation temperatures. The combination of aroma recovery and evaporation with Sigmastar evaporators gives high process flexibility, requires a minimum of steam, has a minimum overall height and can easily be extended. Four out of the 14 plants ordered are evaporation lines with aroma recovery and are already working with positive results.
Food Technology in New Zealand, April 1985, 12, 15, 17

96 Small oil mills

Tinytech Plants Pvt. Ltd., an Indian company, has designed and developed a tiny oil mill. This mill can be run by an electric motor or by a simple diesel engine. The capacity of the mill is 10-20 kgs. of oil an hour. This mill can extract oil from groundnuts, cotton-seeds, linseeds, soybeans, copra, sesamum, mustard and any other edible oil seeds. The mill is easily adapted in the village. For further information contact: Asian and Pacific Centre for the Transfer of Technology, Bangalore.
Documentation Bulletin, No: 62, 1986, 18

97 Refining plant for cottonseed oil

VG Engineers Pvt. Ltd. offer a refining plant for cotton seed oil to get water-white refined oils. The plant can eliminate the need for double refining thus reducing the refining losses processing time and labour. The multipurpose plant is suitable for refining vegetable oils including rice bran, soybean, groundnut, and rapeseed. A fair degree of automation and instrumentation is provided to suit Indian conditions. For further information contact: VG Engineers Pvt. Ltd. 201 Offtel Towers, R.C. Dutt Road, Vododara - 390 009 (Gujarat).
PFNDAI Newsletter, No:6, 1986, 2

98 Volumetric metering feeder

The Caesar-Mascots volumetric metering feeder meets the need for metering and feeding powders, pellets and granules into reaction vessels, batch mixers, continuous mixers, weigh-belts, weigh-hoppers, scales and platforms in chemical, food, pharmaceutical, plastics, cement and other industries. Fixed or portable, the throughput can vary to suit individual needs. The material discharge can be batchwise or continuous. In many cases the accuracy of metering is better than ± 2%. For further information contact: Caesar-Mascots Process and Laboratory Equipment Co. (P) Ltd., P.O. Box 27383, Bombay 400 058.
PFNDAI Newsletter, No:6, 1986, 2-3

99 New solar box cooker

A new "solar box cooker" developed by two American women as an energy-saving cooking method is now being further refined and promoted by the California State University, United States.

The solar box cooker has the double advantage of being able to cook food and destroy the microbial contaminants in water. Some estimates show that in sunny countries, one-half to two-thirds of a family's annual fuel cost could be saved using this cooker. It is also compact, lightweight, portable, efficient and inexpensive to make, reports ASIA TECH.

In essence, solar box cooker are insulated boxes with transparent tops that admit and retain the energy of sunlight. When the box is left in direct sunlight, the temperature inside rises to between 120 and 170 C within 2-3 hrs, depending on the duration of exposure and intensity of the sun's rays. Once the cooker is in sunlight, food can be placed inside and left for several hours without burning or boiling dry. The cooking time is longer - what normally takes 45 min to one hour to cook in a conventional oven will take about twice as long in the box cooker. But since it does not need constant tending, users are free to do other things while their food cooks.
PTI Science Service, 5(5), 1986, 25

100 Continuous horizontal dryer for pastes

Vomm Chemipharma SpA, Italy, manufacture the Turbo-Dryer, which operates by suspending/fluidising the moist material in a horizontal cylinder, the suspension being achieved by mechanical agitation. Heating is achieved with thermic fluid in a conventional jacket and also by hot air inside the cylinder which enables the material to be maintained in suspension. The moist material is conveyed from one end of the cylinder to the other and hence the process is continuous. The horizontal orientation enables precise control of contact time, allowing the Turbo-Dryer to handle heat sensitive materials without the use of vacuum. The Turbo-Dryer can handle feed in the form of

cake, solutions and even viscous slurry. Materials with initial moisture of as much as 80% have been dried. The Turbo-Dryer finds wide applications in the food, ceramics, pharmaceuticals and inorganic chemicals industry. The unit is available against Actual User's Import Licence. For further information contact: Dalal Engineering Pvt Ltd., Post Box No. 63, Thane 400 601 (Maharashtra).
PFNDAI Newsletter, No: 15, 1986, 2

101 Advanced drying sytstems

Barr & Murphy International Ltd of UK, are specialists in custom designed industrial drying and pneumatic handling systems. All flash, fluid bed (batch and continuous) spray, rotary, ring, vibrating bed dryers and pneumatic conveying systems are individually designed for each application. Sizes range from small pilot units to very large industrial installations with capacities of many tons of moisture removal per hour. Materials of construction, methods of heating, performance conditions and layout are adopted to the product to be processed and the site available. Barr & Murphy dryers are also used in chemical, food, starch, and other processing applications. Individual process sections for addition or modernisation of existing plant or turnkey projects can be supplied for starch, gluten, protein, germ, animal feed, modified starches, and alcohol industries. Raw materials can be wheat, corn (maize), potatoes, cassava (manioc, tapioca), sorghum, rice. The key equipments such as separation and refining units and screening systems and dryers are special Barr & Murphy designs which are crucial to the high performance of the plants. For further information write to: Swirl-Flow Process Systems, P.O. Box 1182, G.P.O., Bombay 400 001.
Industrial Products Finder, 14(7), 1986, 110

102 Solar dryer with built-in storage unit

Scientists at the Central Arid Zone Research Institute in Jodhpur have developed a solar dryer with built-in storage unit with a view to utilizing the dryer day and night, removing the problem of high temperature inside the unit which affects the quality of the dried products and using the unit as a solar water heater exclusively.

The unit can be used for dehydrating 15-20 kg of fruit or vegetable with a better temperature regulation because of heat transfer to the water inside the tank beneath the drying trays. This results in heating the water to a temperature of 45-50 C simultaneously which keeps the drying process running overnight and avoids the problems of recondensation, thus giving a better quality of dried products. The unit, when used as a water heater exclusively can give hot water upto 60 C in winter and 45 C next morning if covered by an insulating cover. This device can be tilted easily during different seasons to get the maximum solar radiation.

Scientists have found it not only more effective but also practical unit since the dryers developed earlier were used during the harvesting season and were of no use during the remaining time.
PTI Science Service, 5(5), 1986, 7

103 Peanut sheller

Hand-shelling of 1,000 kg of peanuts would take 1,000 man-hours. A low-cost peanut sheller, which guarantees a 35 per cent increase of income for the farmer while ensuring the quality of peanuts, has been developed at the Engineering Research Division of the Southern Mindanao Agricultural Research Centre (SMARK) of the Philippines.

With the machine, a peanut farmer or business can shell 25 to 30 kg unshelled peanuts per hour. Its shelling capacity increased by as much as 5 kg per hour if the peanuts are dried before shelling.

The operator loads one can (18 litres) of unshelled peanuts on the top cover. While cranking the handle with one hand the other hand regulates the, feed rate of unshelled peanuts entering the top cover opening. The top cover is removable to facilitate periodic cleaning. Frame construction assures a rigid mount and is made of lumber which is bolted together.

The peanuts are shelled inside the shelling chamber by a machanism which consists of a perforated metal screen against which the peanuts are pressed by the shelling drum. The shells are crushed by the rolling action of four pipe rollers following the motion of the handle. The crushed shells and the seeds fall through the screen discharging through an inclined board. The crushed peanut shells may be separated from the seeds manually or by use of an electric fan or a blower. A noteworthy feature of this machine is that one hardly finds broken peanuts seeds after each shelling operation.

Installing a 1/2 HP electric motor and a blower assembly would further increase its shelling capacity, saving labour for other farm jobs. For further details write to Asian and Pacific Centre for Transfer of Technology, 49, Palace Road, P.O. Box 115, Bangalore 560 052.
Deccan Herald, 19 May 1986, 15

104 Simple pulse dehusker for Indian villages

J.B. Central Research Institute, Wardha has developed a hand operated paddy and pulses shelling machine. The dehusker is based on a new design for paddy dehusking in which the grinder comprises of two circular stones which are placed horizontally one over the other where the lowerstone rotates and the upper one is fixed. The distance between the two grinding surfaces can be adjusted. There are thrust and ball bearings fitted to keep the system very light. It is manually operated and has the capacity to dehusk 80 kg of paddy per hour. The broken rice grains are less than four per cent.

The bonded under-runner grinder, as it is also called, is much better than the traditional hand-grinder as it is lighter. The grinding stone can be moulded with locally available stone grits and has a longer life. It has a longer life more production, less breakages and has an adjustable disc. The same grinder can be adjusted for dehusking pulses and can in eight hours prepare two quintals of "dal".

The paddy or whole pulse is fed through the hopper and as the handle is rotated it is displaced down in the grinding pace where it is lightly abrased by the stones and is deshelled. The price of the grinder is approximately $ 50 and it has a capacity to give a wage of $ 1.6 per day to two women (in the Indian context).
Deccan Herald, 19 May 1986, 15

105 Rice polishing machine

CMERI has developed a horizontal abrasive roll type machine capable of polishing both raw and parboiled rice. The machine consists of a grooving cylinder with an abrasive roll fitted with steel screw and a cover clamped on a horizontal shaft rotating at a high speed in a slotted cylinder. An inlet hopper, shutter and feed control gate are provided above the screw conveyor. A valve-adjustable plate with weight is fitted in rice outlet spout. The valve controls the grain flow rate and partially the milling pressure. Brown rice passes through the space between the roll and the perforated cylinder. The bran gets cut through the slots of the perforated cylinder and the polished rice is discharged through the outlet. The abrasive roll rotates at the rate of 800-900 m/min. The gift size of the roll is 20-40 mesh. The screen is made of either wire-mesh or punched sheet with oblong holes for each hole, an inclination of 80° to the axis of rotation helps in better polishing of the grain axially. Over the full length of the perforated cylinder resistance pieces serve as brakes to the revolving rice. For further information contact: Central Mechanical Engineering Research Institute, Durgapur, India.
Documentation Bulletin, No: 62, 1986, 16-17

106 Apple coring and slicing machines

Paul Kunz Systems, part of Zimmermann and Jansen GmbH of Postfach 545, 5160 Duren, West Germany, are now marketing two machines for coring and slicing apples. One unit, denoted as model 6SA, is designed to handle up to 3800 lb per hr or 250 apples per min, whereas the larger model, denoted as 8SA, has a capacity of 5200 lb per hr or 335 apples per min.

Apples are fed either on a six or eight row chain, depending on the model, with depressions to ensure that only one applied at a time can fit each pocket. The scalloped flights discharge the apples on to a further chain that conveys the apples to the actual coring stations; these can be followed by a slicing station. Hand labour is needed to feed in the apples, and, after coring and slicing, the cores and slices are ejected separately.

Various diameters of corer are available and star-shaped slicing knives can produce 10, 12 or 14 sections.
Food Trade Review, September 1985, 451

107 Fruit processor

The fruit processing machine mainly comprises a base, a motor, a housing, a vessel and agitators. The cylindrical vessel made of stainless steel sheet of 14 SWG is 120 cm high and 50 cm in diameter. It has an outlet of 8 cm diamter fitted with a cap. The vessel is bolted on the bracket with 16 stainless steel bolts. The power shaft of the machine fixed in the housing with thrust-cum-bush bearings projects at the bottom of the vessel with a press-pin connecting arrangement, to which three types of agitator-cutter, squeezer and mixer could be easily fixed. The 5 hp speed control type motor is fixed vertically on the base. For further information contact: K.X. Benedict, Technical Consultant, KIFCO Products, Panampilly Nagar, P.B. No. 2405, Cochin-682016.
Documentation Bulletin, No: 62, 1986, 15

108 Volumetric wheel flow meter

The house of Toshniwals, in collaboration with Bopp & Reuther, Fed. Republic of Germany, manufacture oval wheal flow meters. The flow meter is available in capacities ranging from 12 lit/hr to 20,000 lit/min and pressures up to 100 kg/cm^2 with an accuracy of ±.1%. It comes in different configurations with varied materials of construction to suit a range of industries which includes process industries and thermal stations. The flow meter is capable of precise volumetric flow measurement of vegetable and other oils, solvents, alcohols, beer, milk, dyes, beverages, etc. For further information contact: Toshniwal Bros. (Hyd) Pvt. Ltd, 268 Kilpauk Garden Road, Madras 600 010.
PFNDAI News Letter, No:1, 1986, 2

109 Bottle washing and filling machines

The soaking tank of Airovac bottle washer is made of stainless steel. The brushes are so designed as to reach the corners of bottles of different sizes and shapes. Available in 6, 12, and 24 jet rinsers. Airovac bottle filler can fill bottles of any size and shape. It is suitable for filling oils, liquids, drugs, perfumes, liquid soaps, milk, beverages,

etc. For further information write to: Acmevac Sales Pvt. Ltd. 109 Unique Industrial Estate, Chakala Road, Andheri (East), Bombay 400 093.
Industrial Product Finder, 14(6), 1986, 157

110 Liquid dispenser pump

Dosatron International of France have developed a self-operating liquid dispenser pump that works without electricity. It operates automatically on pressure of water flowing in-the piston is driven by the pressure of water inside. The pump gives accurate volumetric dosages. The valves and washers used in this system are non-corrosive and self-cleaning types. Maximum flow is 25 litres/min, and minimum flow is 0.5 litre/min. This dispenser pump can be used for treating two different products by using two consecutive liquid dispensers. Applications are in curing vitamins, anti-parasites, mineral salts, tranquilizers, additives, and for disinfecting drinking water, cleaning of water in dairies, transport vehicles, public buildings, production rooms for sprinkling on fertilizers and for use in food industry, solule oils, laundry, dyes, etc. For further information write to: BB TT Marketing, 183-A, Shukrawar Peth, Pune, Maharashtra 411 002.
Industrial Products Finder, 14(7), 1986, 112

111 Filter press

The Flu-Con plate and frame type filter presses are made out of cast iron, aluminium, stainless steel, gunmetal, teak-wood and rubber moulded. Suitable for liquid-solid separation, by means of a permeable filter media, the filter pres finds applications in edible oil, sugar refining, and other chemical industries. Flu-Con can provide devices for hydraulic closing, plate shifting, cake washing and cake release. The press is available in 6 sizes - 15.24, 30.48, 45.72, 60.96, 76.2 and 91.44 cm^2 - and can be made with chequered or parallel groove design to have more filtration area. For further information contact: Fluid Control Equipments, 77/574 Mount Road, Teynampet, Madras 600 006.
PFNDAI Newsletter, No:6, 1986, 3

112 Juice pressing system offers high juice recovery with low solids contents

Atlas Pacific Engineering Co. of Emeryville California have come out with a fully automated modular pressing system and it is reported that the solids content will be 1 to 2% with the dramatic reductions in the usage of press aid, enzymes, filter and filter media.

The machine is offered in modular form in 1, 2 or 3 stage configurations and the all stainless steel press comprises a volumetric feed-hopper a woven synthetic product belt, a pneumatic product pressing head and a fully programmable controller. The unit operates in continuous form utilising individual batch press cycles. The initial stage of the operation is shredding of the product through a specially designed Corenco apple chopper to provide the correct texture of mash for the machine. After the shredding operation, apple mash flows into the volumetric feed hopper and as the machine moves into its pressing phase the feed hopper gate opens and the mash is spread over the indexing conveyor belt to a pre-determined fix. The hopper gate closes and the belt moves forward to position the mash directly under the pressing head. The pressing head driven by a hydraulic actuator descends and locks onto the stationary belt. Pressurised air fills the cavity behind the pressing membrane thus compressing the pomace against the drainage screen or woven synthetic belt. The resultant juice drains quickly and continuously from the pomace into a collection pan from where it may be directed to further processing.

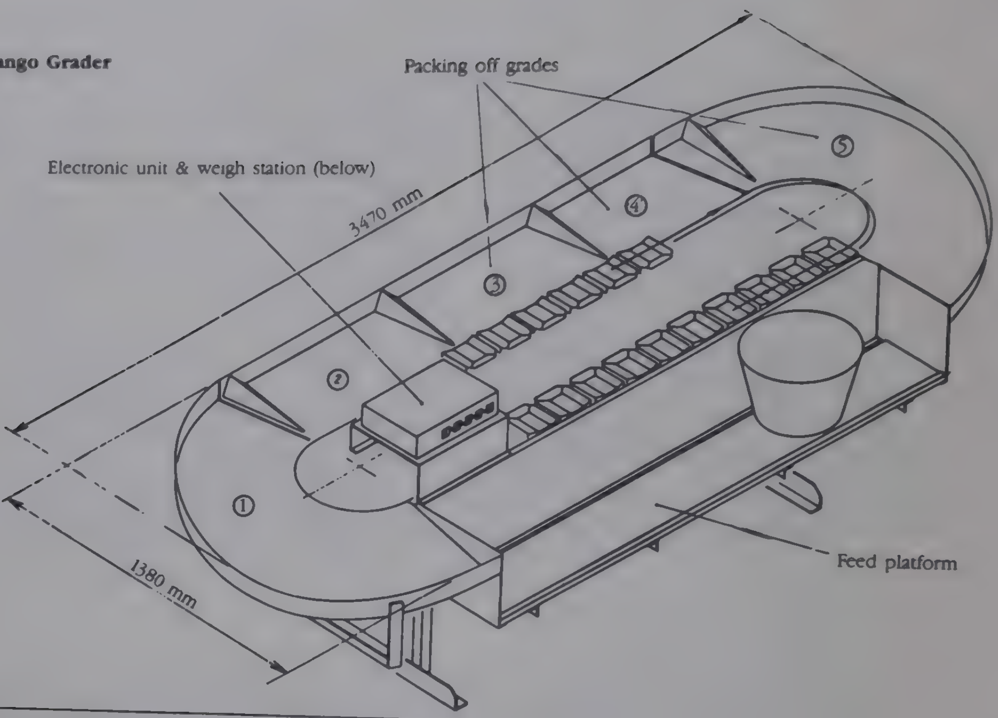
Production capacity of the Atlas Pacific Press system on apples is for a single stage press up to 6(US) t/h, double stage system 7-8(US) t/h and a triple stage system 8-10(US) t/h. For further information contact: Atlas Pacific Engineering Co., 34, Queens Road, Melbourne, Vic. 3004.
Food Technology in Australia, 37(8), 1985, 351

113 Mango grader

The prototype sizer built and tested in the Philippines is relatively small, being approximately 1.3 m wide by 3 m long. It has thirty carriages each lined with foam and rubber which cycle in a horizontal plane at 100 to 120 units per minute. One or two operators are required to load mangoes (two at a time) from field baskets or boxes. Loading takes place on one side. There is a single weigh station which weighs each carriage and mango and automatically deducts for a preset tare weight for the carriage. The net weight is locked into a register and fed through a comparitor circuit to classify it into one of five possible weight ranges set by the operator. These ranges are achieved by dialling weight switches to the actual limits desired which are displayed in grams. The circuit then automatically decrements an eject pulse through a step-down circuit as each subsequent carriage passes over the scale until the pre-weighed sample reaches its relevant packing station. At this time a solenoid is fired to permit the mango to roll onto its packing tray.

The mangoes should be placed on the carriages towards their rear edge and parallel to the direction of travel. This ensures that they will not roll out while being conveyed around the bends and that they will eject with a simple rolling action and not tumble end over end. The weigh section is protected from operator interference by installing the electronics over the weigh station. It is necessary to allow several minutes of warm-up prior to achieving accurate weighing.

AFHB Mango Grader



Mr Elford is Special Purpose Machinery Consultant, Western Australian Overseas Project Authority, Perth, Western Australia.

Asean Food Journal 1(1), March 1985, 37-38

114 Chiller reclaims energy

A new range of chilling plant, with the ability to recover waste heat, has been announced by Tri-Therm (Temperature Controls) Ltd of Unit 4, 96 Brook Street, Colchester, Essex CO1 2UZ.

The reclaimed heat can provide either a supply of hot water at 55 C, or warm air at 35 to 40 C.

Standard chilling plants have cooling capacity ratings of 60 to 296 kW, with the chilled water output at 10 C. In terms of coefficient of performance (energy out: energy in), Tri-Therm claim to often achieve around 3:1 and sometimes as high as 7:1.

Design features considered important by Tri-Therm, and incorporated in all their heat recovery units, include the use of two independent refrigeration circuits.

The chillers are of packaged rather than split configuration, i.e., the condenser is integral.

The refrigerant compressors have automatic capacity control to hold them at peak efficiency during any load fluctuations.
Food Trade Review, September 1985, 454

15 Hoegger separator system S-840

This machine has been developed for the separation of skin, black spots and other hard defects from cooked potatoes and similar products, and performs a ricing operation on the selected remainder.

The machine is fed from a hopper containing some 300 litres of product. A double lead screw, with a completely separate conveying system, transports the product to a built-in-pressure pump.

This rotary slide valve pump is a very robust unit with hardened housing and slide valves having a rapid action. The drive for the conveying system is an electric motor with 3 speeds, with V-belts and a closed gearbox which runs in an oil bath. The main screw is chain driven through an intermediate gear arrangement.

The separator consists of two individual discs and a patented rotating cutting wheel which permits a continuous cleaning of the product from the discs. The separator opening is adjustable by hand, by means of a rotary slide valve, to compensate for any change in output rate.

The separator is independently driven by a two speed motor through a V-belt and reduction gearbox running in an oil bath.

Capacity for fine separated potato mash is 1000 kg per hr without excess cell destruction; higher capacity with reduced mash quality is possible. For further information contact: Flo-Mech Ltd of Flo Mech House, Paxton Road, Orton Goldhay, Peterborough PE2 0YA.
Food Trade Review, November 1985, 559

116 New desinewing machine

Stephen Paoli International Corp. of Illinois, USA, originators of automatic deboning equipment has announced development of a new desinewing application now available on any model of their latest design one-step separators. The purpose of this operation is to separate all sinew, tendons, gristle and connective tissue from meat such as turkey drumsticks from which the bone has been removed, and lower grade red meat cuts. The desinewed meat has a texture that when formed and cooked as patties, burgers or rolls has a steak-like

appearance and bite. The separator has only six major stainless steel parts, induces no temperature rise and requires no preliminary grinder. Capacities range from 300 to 3000 kg/h. Further details may be obtained from Stephen Paoli International Corporation, 2531-11th Street, Rockford, IL 61101, USA.
Food Technology in Australia, October 1985, 440

117 Metal detector

A new metal detector, entitled 'Metalaram' has been introduced, designed on flexible lines to suit user's specific requirements. The unit's basic purpose is to protect processing machinery used in a wide variety of industries from damage by ferrous and non-ferrous metal objects, which accidentally find their way into the materials being handled. Applications include the protection of chain saw, sawbands, planners and chippers from such items as nails, staple and shrapnel in the wood they handle, acting as a first line of defence by checking incoming items such as meat, cheese, sugar and flour, etc. and prior to further processing. The system operates on an audible or visual alarm and an automatic reject mechanism which diverts detected metal objects from the main flow line. For further information write to: Shree Krishna Iron & Steel Co. 23A, Nataji Subhas Road, Calcutta 700 001.
Industrial Products Finder, February 1986, 83

118 Pulper

Kifco Products have introduced an entirely new type of multipurpose fruit pulping machine which is fast working hygienic, safe, compact and economical. It can pulp, mix and sqeeze all varieties of fruits, including orange and grape. While squeezing or pulping orange and grape, no seed will be broken. The machine mainly consists of a motor, bracket, cutter and vessel. The cutter, which is made from stainless steel suitable for processing fruits, is fixed at the inside bottom of the cylindrical stainless steel vessel. At the bottom of the vessel there is an outlet which can be closed when required. For squeezing and pulping, feed fruits continuously through the vessel after starting the motor. The squeezed/pulped fruits will rush out through the outlet. For mixing fruits close the outlet and fill fruits and start the motor. The whole quantity of fruits will now be mixed in pulped form. The operation of this machine is very hygienic since there is no metal with metal friction while working. After operation, the machine can be easily cleaned mechanically. The multi-purpose fruit pulper is useful in fruit industries and hotels engaged in producing juice, jam, syrup and other fruit/pulp based products. The machine is available in various capacities. For further information write to: Kifco Products, Panampilly Nagar, P.O. Box No. 2405, Cochin, Kerala 682 016.
Industrial Products Finder, February 1986, 75

PACKAGING

119 Paperboard package for juices

Extends shelf life of juices and drinks without refrigeration and provides consumers with an attrative and familiar gable-top carton. As an alternative to bottles and .fgf 12; cans, the easy-open design features a perforated area-located below the main gable-top seal-which provides improved sealing integrity. Fore more information, contact International Paper Co., Room 41-56, 77 W. 45th St., New York, N.Y. 10036.
Food Technology, December 1985, 82

120 Polyvinylidene chloride (PVDC)

Polyvinylidene chloride (PVDC) copolymer packaging film, called Saran HB monolayer lamination film, provides improved barrier resistance to gases, moisture, odors, and flavors. As an oxygen barrier, this PVDC copolymer packaging film is 10 times more effective than its predecessor, Saran Wrap films. The moisture barrier properties of Saran HB is about five times greater than Saran Wrap. Saran HB films exhibit excellent optical clarity, chemical resistance, and thermoformability. In addition, Saran HB films are suited for high temperature short time processing up to 275 F. For more information, write to Dow Chemical USA, Inquiry and Distribution Services, 1703 S. Saginaw Rd., Midland, MI 48674
Food Technology, December 1985, 81

121 Cup and cone filling machine

The Panchal Workshop manufacture the Panpack cup and cone filling machine which is suitable for food, pharmaceutical and chemical industries. The machine finds application in packing plants to fill fluid, semi-fluid and viscous materials like shrikhand, ice cream, edible oil, jam, fruit syrup, etc. It is a sophisticated twelve-station machine functioning on automatic basis, where the feeding of cups and required material to the machine can be done manually. Machine takes cups one by one, fill them accurately, sprinkles dry fruit or fruit jelly on the top, places foil on cups, heat seals with non-stick type quick release. Teflon coated heat sealing plate, and ejects the filled cups to the unloading platform. It can handle a variety of sizes and shapes of cones or cups and can fill 500 to 7,000 cups/cones per hour. Since the machine has No cup/No fill facility the operations of filling, .Pg
sprinkling and foil placing would not take place in the case of non-insertion of cup into any of the pockets of the rotary platform. For further information write to: The Panchal

Workshop, Anand Sojitra Road, P.O. Box. No. 62, Anand, Gujarat 388 001.
Industrial Products Finder, 14(7), 1986, 161

122 Bottling of coconut water

Process: The ripe coconut water has to be brought to the processing plant immediately after breaking the coconut. The coconut water is then filtered and processed for upgrading and preservation. The filtered liquid can then be stored in a tank to serve as feed stock to the liquid filling machine. Prior to filling the bottles have to be cleaned with a brushing machine followed by washing in cold water and then sterilizing in hot water or in a set of stream. The filled bottled then have to be sealed by the standard crown cork with crown corking machine. If gas carbonation is desired, a carbonating machine can also be incorporated for supply in the form of carbonated beverage.
Economic and Commercial News, 16(13), 1986, 11

123 Dry packed green pepper

The process "dry packed green pepper' aims at producing a new product packaging the green pepper berries in moist condition in flexible packages. The dry packed pepper will have the soft texture of canned and bottled green paper. The dry packed pepper can be packed in flexible packaging like polythene and aluminium foil and this will certainly reduce the cost of packaging unlike when packed in cans or bottles. Besides the cost of transportation will be reduced since the new product does not need any covering liquid.

The freshly harvested green pepper is cleaned after despiking. The berries are thoroughly cleaned in water, which are steeped in saturated brine solution containing chemicals. While curing, the enzymic action is inhibited and the brown discolouration is prevented. It is then drained, packed in suitable flexible packages. The main raw material being green pepper which should be fresh and slightly undermature. The main items of equipments required are platform balance, heat sealers, packaging materials etc. All are available indigenously.

Canned bottle and dehydrated green pepper have considerable demand in European market due the freshness and natural aroma of the product. It is estimated that out of the world demand of 800-1000 tonnes of canned and bottled green pepper. During 1977-78 exports of canned green pepper from India amounted to 139 tonnes, valued at Rs. 1.6 million. Besides, India also exported 81.69 tonnes of dehydrated green pepper which is equivalent to 400 tonnes of moist green pepper valued at Rs. 5.6 million. The demand for the processed green pepper is steadily icreasing. Since the new product developed has the qualities, namely green colour and fresh aroma of the

canned and bottled green and involves less processing and packaging cost, it can partly replace the above products and the demand can increase further.
Economic and Commercial News, 16(13), 1986, 9

ANALYSIS

124 Carbohydrate analysis

HPLC columns are optimized to provide a high degree of selectivity for a specific class of compounds. Eight different columns are available for carbohydrate analysis, and both resin-based and silica-based columns are available. Used alone, each column provides fast separations, with excellent resolution of a specific carbohydrate class. For complete profiles of complex carbohydrate mixtures, two or more columns may be used together and multiple detection may be employed. For a copy, write to Bio-Rad Laboratories, 32nd & Griffin Ave., Richmond, CA 94804.
Food Technology, December 1985, 90

125 Salmonella testing

Imbros Pty Ltd. Australian agents for Malthus Instruments advise of the availability of the automated Malthus microbiological analyser that is designed to reduce costly holding times for materials awaiting microbiological clearance.

Currently, testing for salmonellae has taken typically 4-7 days by conventional microbiological methods. This time may be reduced to 14-39 h by a new specific salmonella screening method which extends Malthus range of applications. With the possibility to run up to 256 tests simultaneously, the systems automate and speed testing times for a wide range of applications including salmonella; total viable counts; coliforms; hygiene tests and sterility tests. The computer based instrument is designed for continuous automated analysis 24 h a day. Samples need no special preparation and opaque liquids or suspensions can be used. The modular design allows the smallest instrument with 32 sample capacity to be expanded to a maximum of 256 as workload increases. The software includes all normal laboratory book-keeping sample identification, graphics and data display.

Samples can be analysed singly or in batches. After the sample is placed in the instrument, growth monitoring is automatic and continuous, the status of each sample is available throughout the test period, and the time for detection bacterial growth, typically within a working day, is directly related to the original concentration of microorganisms.

Further information is available from Jennifer Brown, C/o Magna House, PO Box 100, Drummoyne, NSW 2047.
Food Technology in Australia, 37(12), 1985, 548

126 Meat fat analyser

The pricing of packed meat is done based on the fat content of the meat product. The usual method of assessing the percentage of fat content is visual guesswork accompanied by destructive chemical sampling obviously resulting in approximations. The meat fat analyser from Quantum Electronics Pty. Ltd. of Australia is designed to eliminate these approximations and to price meat according to the accurate fat percentages.

The new production line boneless meat fat analyser is designed especially for the meat export industry. The equipment fits in line with a conveyor system where packed and weighed boxes of meat pass through the instrument at the rate of 360 boxes per hour. A digital display shows the fat percentage for each box as it passes through and, at the end of a shipment run, an average is determined. The result is said to be an accurate fat content for that shipment, within 0.5 per cent of the actual chemical lean. The analyser may be used to measure boxes of boneless, ground and emulsified meat without stopping the conveyor and can be operated readily by unskilled plant personnel.
Asia-Pacific Tech Monitor, January-February 1986, 39

127 Moisture meter

The Electronic moisture meter (model SICO EGM-85) is useful for measuring the moisture content (in per cent) of cereals, pulses, seeds, coffee, tea and other granular materials.

It works on the principle of rf capacitance formed between two gold-plated electrodes. The meter is provided with a direct scale for measuring common grains such as wheat, rice and arhar dal. Other granular materials can also be measured with the help of calibration chart provided with the instrument. For further details, write to Scientific Instrument Co. Ltd., 6, Tej Bahadur Sapru Road, Allahabad 211 001.
Financial Express, 8 June 1986, 6

128 Spectrophotometer

Spectrophotometer is an updated version of the Spectronic 20 spectrohpotometer. Called the Spectronic 20 D, the instrument features digital wave length and data displays, cocentration mode, built-in RS-232 serial interface, and a wide range of accessories. The Spectronic 20D is easy to use and provides stability, testing versatility, high sensitivity, and high reproducibility. The instrument has a 20 nm spectral

bandwidth and wavelength range of 340-600 nm. For more information, write to Milton Roy Co., 820 Linden Ave., Rochester, NY 14625.
Food Technology, December 1985, 89

129 Method to detect synthetic carotene derivatives in food and drink

Recently manufacturers have introduced drinks coloured and flavoured with synthetic chemicals identical to some components of natural foods. These have many of the price and manufacturing advantages of traditional artifical soft drinks but they more nearly resemble fruit juice in taste and colour.

The food industry makes many other products in addition to fruit juice to which no colour may be added. However, the consumer expects many of these products to have a characteristic colour based on their knowledge of the ingredients. In these instances, when the addition of colour, or certain kinds of colour, is not permitted, analytical discriminations become essential to the enforcing authority.

This method reported in this paper has been developed to enable the analyst to extract and identify synthetic carotene colours in foods and drinks and identify related compounds obtained from natural extracts. The method has been applied to a number fo coloured foods and drinks. The method comprises of:

(a) Liquid samples: Mix equal volumes of sample and acetone, then extract with approximately 20 ml of petroleum ether (60-80). The amount of sample taken depends on intensity of colour present. Discard aqueous layer and gently wash petroleum ether with water. An emulsion is likely if the petroleum ether is shaken vigorously with the water washes. Concentrate petroleum ether if colour is faint.

(b) Solid samples (low fat): Homogenise sample in acetone (normally about 30-50 g in 70 ml acetone) and filter using vacuum. Rehomogenise residue in further acetone (70 ml)and again filter. Repeat once more if significant colour remains to be extracted from the sample.

Combine acetone filtrates and extract into petroleum ether (60-80) as above (a) for liquid samples. If the sample contains insufficient water, the petroleum ether layer will not separate, and in this case water should be added until separation occurs.

(c) Solid sample (high fat): Extract into acetone, then into petroleum ether as for low fat solid samples (b). Extract colour from petroleum ether with dry dimethylformamide. Sufficient petroleum ether should be used to dilute the fat to a concentration of about 1-5 per cent.

Additional aliquots of dimethylformamide should be used until little additional colour can be extracted. Take care to transfer no petroleum ether containing fat or oil to the dimethylformamide extracts.

Add an equal volume of acetone to the combined dimethylformamide extracts, then about 10 ml of petroleum ether, mix, then add water until the petroleum ether phase separates. Concentrate petroleum ether, if necessary.

Spot extracts and solutions of colour standards on to silica gel TLC plate, dry quickly at about 100 C, and immediately develop in mobile phase of petroleum ether: dimethyl ether: acetic acid (78:19:3). Identify colour components by comparison with synthetic colours and with extracts obtained from natural products. The spots produced are unstable and will darken, then disappear within about 15 minutes. They can be stabilised for a few days by applying ammonia fumes to the developed TLC plate immediately after it is removed from the developing solvent.

The method reported in this paper is suitable for identification of colours in most coloured foods and drinks where the colour is oil soluble. These colours include additives such as the synthetic carotene derivatives, extracts containing various xanthophylls, oil soluble annatto, tomato and paprika pigments, pigments from salmon, and the pigments from the majority of yellow and orange coloured fruit and vegetables.
Food Technology in New Zealand, April 1985 47, 49

COMMERCIAL INTELLIGENCE

PRODUCTION (RAW MATERIAL)

130 All-India final estimate and cardamom, 1984-1985

State	Area (Thousand Hectares)	Production in terms of dried, cured cardamom (Thousand tonnes)
Karnataka	31.4	1.8
Kerala	54.5	2.0
Sikkim	22.0	3.8
Tamil Nadu	5.3	0.5
West Bengal	1.6	0.6
	114.8	8.7

Agricultural Situation in India, December 1985, 885

131 All-India final estimate of coriander, 1984-85

State	Area ('000 Hectares)	Production ('000 tonnes)
Andhra Pradesh	142.0	38.5
Bihar	3.8	2.2
Haryana	0.2	0.1
Karnataka	22.4	3.4
Madhya Pradesh	46.6	12.6
Orissa	17.8	10.0
Rajasthan	101.8	29.4
Tamil Nadu	57.5	22.2
Uttar Pradesh	6.0	3.0
All India	398.1	121.4

Agricultural Situation in India, December 1985, 885

132 All India final estimate of coconut, 1984-85

State	Area (000 hectares)	Production (Million nuts)
Andhra Pradesh	47.0	194.5
Assam	7.5	47.9
Karnataka	193.9	1011.1
Kerala	689.3	3395.0
Maharashtra	10.6	99.3
Orissa	26.2	98.3
Tamil Nadu	152.8	1627.5
Tripura	2.7	2.1
West Bengal	15.3	169.7
Andaman & Nicobar Islands	20.8	96.6
Goa, Daman & Diu	22.3	106.0
Lakshadweep	2.8	23.5
Pondicherry	1.6	15.7
Total	1192.8	6887.2

Indian Coconut Journal, February 1986, 30

133 Meat production in selected Asian countries kg./capita

Australia	207.7	Bangladesh	3.6
New Zealand	34.8	India	1.3
Indonesia	3.1	Korea (Rep.)	10.3
Malaysia	12.6	Philippines	14.1
Singapore	37.5	Sri Lanka	2.1
Thailand	1.0		

Indian Food Packer, 39(6), 1985, 73

134 Coffee output

The country's coffee production during the coming coffee season was expected to be 1,60,000 tonnes as against 1,20,000 tonnes last year. The production would comprise 83,000 tonnes of arabica and 77,000 tonnes of robusta.
The Economic Times, 1 June 1986, 7

135 Cardamom output

Production and export of cardamom (small) during 1985-86 have registered new records, according to UNI quoting cardamom board sources. Production during the period was 4,600 tonnes, the previous peak production being 4,500 tonnes in 1979-80.

The export of the spices was 3,210 tonnes valued at Rs. 52.51 crore as against 2,383 tonnes valued at Rs. 64.81 crore in 1984-85. Sources said that although the volume of export registered a 35 per cent increase over last year, the earnings recorded a decrease of about 19 per cent due to the fall in price in the international markets.

The Economic Times, 2 June 1986, 4

136 State-wise estimates of area and production of rice, 1983-84 (Final)

	Area (Hectares)	Production (Tonnes)
Andhra Pradesh	40,68,900	85,67,700
Assam	23,22,246	25,40,010
Bihar	49,10,210	49,84,534
Gujarat	5,40,300	7,54,300*
Haryana	5,33,000	13,25,000*
Himachal Pradesh	92,842	1,11,530*
Jammu & Kashmir	2,75,615	5,69,437*
Karnataka	19,19,707	21,96,289
Kerala	7,46,164	12,42,828
Madhya Pradesh	48,87,800	47,41,800*
Maharashtra	15,21,300	24,60,600
Manipur	1,61,220	2,55,130
Meghalaya	1,11,554	1,31,159
Nagaland	1,14,850	1,27,987
Orissa	43,55,770	51,20,570
Punjab	14,81,000	45,36,000*
Rajasthan	1,60,173	2,17,457*
Sikkim	1,53,000	13,620
Tamil Nadu	22,82,400	44,47,890
Tripura	2,85,666	3,99,700
Uttar Pradesh	53,73,907	67,90,936*
West Bengal	53,72,620	79,40,310
Andaman & Nicobar Islands	11,655	22,000
Arunachal Pradesh	1,00,953	1,06,000
Dadra & Nagar Haveli	10,729	17,970
Delhi	3,350	6,247
Goa, Daman & Diu	53,685	1,24,075
Mizoram	47,671	36,713
Pondicherry	25,340	59,346
All India	4,11,28,398	5,98,26,033

* Kharif production only

Agricultural Situation in India, December 1985, 859-866

137 All-India final estimate of oilseeds production 1984-85

Production in '000 tonnes

State	Groundnut	Castor Seed	Sesamum	Rapeseed & Mustard	Linseed	Saf-flower	Niger seed	Sun flower	Soyabean
Andhra Pradesh	1,323.4	61.2	18.9	0.3	1.7	11.0	2.6	11.3	–
Assam	–	1.0	8.0	123.5	4.4	–	–	–	–
Bihar	6.6	1.4	7.3	66.9	44.1	0.3	13.7	0.2	–
Gujarat	1,572.3	348.6	49.9	239.3	–	–	–	–	4.5
Haryana	7.1	–	2.6	300.0	–	–	–	–	–
Himachal Pradesh	0.9	–	1.5	0.5	1.1	–	–	–	0.1
Jammu & Kashmir	0.9	–	4.7	51.8	1.4	–	–	–	–
Karnataka	746.7	15.7	29.3	1.1	10.3	119.7	9.3	140.6	–
Kerala	11.0	–	3.5	–	–	–	–	–	–
Madhya Pradesh	168.3	0.5	41.8	200.6	117.1	0.3	34.0	–	748.0
Maharashtra	854.3	2.1	52.0	1.7	61.8	364.1	22.6	170.0	–
Manipur	–	–	0.6	1.5	–	–	–	–	–
Meghalaya	–	–	0.4	2.4	–	–	–	–	0.6
Nagaland	0.4	–	0.7	3.9	–	–	–	–	0.4
Orissa	484.8	27.0	106.7	52.6	12.7	1.9	62.3	0.5	–
Punjab	45.0	–	4.9	140.0	0.6	–	–	–	–
Rajasthan	172.1	4.4	72.1	846.1	36.8			1.3	26.1
Sikkim	–	–	–	3.9	–	–	–	–	4.3
Tamilnadu	1,250.1	6.7	47.6	0.2	–	–	–	38.2	–
Tripura	0.7	–	0.9	2.1	–	–	–	–	–
Uttar Pradesh	89.4	0.2	17.9	820.4	81.8	–	–	1.7	148.7
West Bengal	7.2	–	52.4	164.0	14.6	–	2.3	0.8	0.2
Arunachal Pradesh	–	–	0.3	7.2	–	–	–	–	0.6
Dadra & Nagar Haveli	–	–	–	–	–	–	0.1	–	–
Delhi	–	–	–	0.2	–	–	–	–	–
Mizoram	–	–	0.6	–	–	–	–	–	–
Pondicherry	2.9	–	0.2	–	–	–	–	–	–
Total	6,744.1	468.8	524.8	3,030.2	388.4	497.3	146.9	364.6	933.5

Agricultural Situation in India, November 1985, 765-772

All India final estimate of food grain production 1984-85

Production in '000 tonnes

State	Rice	Jowar	Bajra	Maize	Ragi	Small millets	Wheat	Barley
Andhra Pradesh	6,984.3	1,112.8	215.0	444.8	209.4	126.2	9.7	-
Assam	2,418.5	-	-	12.0	-	6.2	127.9	-
Bihar	5,321.5	5.4	7.6	826.3	103.0	50.4	3,099.1	68.0
Gujarat	838.1	499.7	1,535.4	383.6	44.2	65.1	1,329.3	9.8
Haryana	1,363.0	44.0	479.0	79.0	-	-	4,418.0	95.0
Himachal Pradesh	117.2	0.1	-	571.6	6.7	10.3	230.1	25.0
Jammu & Kashmir	569.0	0.1	4.6	455.1	-	8.9	178.6	6.5
Karnataka	2,372.6	1,638.8	180.6	413.2	1,112.6	100.4	189.6	-
Kerala	1,231.8	0.6	-	-	1.0	1.8	-	-
Madhya Pradesh	3,674.3	1,626.8	139.6	1,110.7	4.9	330.1	3,729.1	138.3
Maharashtra	1,936.2	4,802.4	566.2	116.8	261.9	75.6	856.5	5.9
Manipur	333.0	-	-	12.2	-	-	-	-
Meghalaya	124.2	-	-	24.1	-	2.4	5.1	-
Nagaland	102.4	-	-	15.1	-	-	-	-
Orissa	4,526.0	16.2	8.7	200.0	270.9	178.0	150.0	-
Punjab	6,057.0	1.1	61.0	575.0	-	-	10,183.0	88.0
Rajasthan	212.8	413.9	1,567.1	1,122.0	-	15.1	2,794.5	377.8
Sikkim	15.6	-	-	40.0	4.0	-	15.3	1.2
Tamil Nadu	5,394.0	510.3	432.6	49.2	310.0	145.1	0.3	-
Tripura	350.1	-	-	-	-	-	3.4	-
Uttar Pradesh	7,178.3	573.4	954.7	1,772.4	174.9	179.3	15,974.0	708.9
West Bengal	8,092.6	0.1	0.1	94.1	10.1	7.8	812.2	18.3
Andaman & Nicobar Island	22.0	-	-	-	-	-	-	-
Arunachal Pradesh	117.6	-	-	32.6	-	16.2	6.6	-
Dadra & Nagar Haveli	18.4	0.6	-	-	4.2	0.4	0.1	-
Delhi	5.1	5.5	6.1	0.3	-	-	116.9	1.0
Goa, Daman & Diu	186.1	-	0.5	-	12.4	-	-	-
Mizoram	36.7	-	-	5.8	-	-	-	-
Pondicherry	78.6	-	2.0	-	2.0	0.1	-	-
TOTAL	58,636.2	11,251.8	6,160.8	8,355.9	2,532.2	1,319.4	44,229.3	1,543.7

Agricultural Situation in India, November 1985, 747-756

139 All India final estimate of pulse production, 1984-85

Production in '000 tonnes

State	Gram	Tur	Black gram	Green gram	Horse gram	Lentil	Peas	Khesari	Moth bean	Others
Andhra Pradesh	13.8	57.0	201.5	166.5	65.4	–	–	–	–	5.8
Assam	2.1	7.2	–	–	–	–	–	–	–	50.2
Bihar	162.7	119.4	43.6	71.5	43.0	114.8	19.8	249.4	–	13.8
Gujarat	101.2	251.1	34.2	112.6	–	–	–	–	28.6	28.3
Haryana	318.0	15.5	3.6	4.5	–	9.6	3.6	–	0.2	0.7
Himachal Pradesh	0.6	–	4.2	–	1.5	–	–	–	0.1	1.1
Jammu & Kashmir	0.3	–	9.0	5.0	0.8	0.2	2.2	–	10.8	3.3
Karnataka	77.1	182.9	13.0	27.8	128.5	–	–	–	–	27.5
Kerala	–	0.1	1.9	1.2	13.1	–	4.8	–	–	0.9
Madhya Pradesh	1,283.3	407.6	193.4	60.9	48.9	111.7	36.9	171.9	–	3.8
Maharashtra	201.7	485.2	91.7	158.8	84.2	4.1	4.3	20.7	35.7	27.9
Meghalaya	0.1	0.3	–	–	–	–	–	–	–	0.9
Nagaland	–	–	–	–	–	–	–	–	–	4.9
Orissa	28.4	87.9	275.8	376.0	155.2	–	–	–	–	131.5
Punjab	61.0	45.6	6.8	29.8	–	3.8	3.9	–	0.8	–
Rajasthan	969.3	22.6	76.2	49.5	–	17.4	10.8	–	179.5	35.7
Sikkim	–	–	4.2	0.6	–	–	–	–	–	4.8
Tamil Nadu	3.8	87.3	126.4	51.8	63.0	–	–	–	–	16.1
Tripura	0.2	0.2	0.5	0.3	–	0.2	0.2	–	–	0.9
Uttar Pradesh	1,272.9	882.0	56.0	54.0	–	241.9	251.2	–	0.5	–
West Bengal	49.9	8.3	39.2	24.7	3.1	40.6	1.8	52.2	–	1.4
Andaman & Nicobar Island	–	–	–	–	–	–	–	–	–	0.3
Dadra & Nagar Haveli	0.1	1.0	1.3	–	–	–	–	–	–	0.3
Delhi	0.6	0.2	–	–	–	–	–	–	–	0.8
Mizoram	–	–	–	–	–	–	–	–	–	0.8
Pondicherry	–	–	1.1	0.2	–	–	–	–	–	–
TOTAL	4,547.1	2,666.0	1,183.6	1,195.7	606.7	544.3	339.5	494.2	256.2	361.7

Agricultual Situation in India, November 1985, 757-764

PRODUCTION (INDUSTRIAL)

140 Sugar production

According to the Indian Sugar Mills Association sugar production during the first fortnight of April 1986 (i.e. 1.4.1986

The total closing stock of sugar as on 15th April, 1986 was 48,50,000 tonnes (including 93,000 tonnes of imported sugar) as against 43,46,000 tonnes (including 82,000 tonnes of imported sugar) on the same date last season.

Indian Sugar Mills Association, Press release, 2 June 1986

141 Production and consumption of vanaspati

(Tonnes)

Year	Production	Consumption
1980	7,05,427	7,06,437
1981	8,48,068	8,46,500
1982	8,86,849	8,74,727
1983	8,90,510	8,99,351
1984	9,01,563	9,03,474

Financial Express, 14 March 1986, 9

EXPORT

142 Preshipment finance for exports

"The Reserve Bank of India have reviewed the preshipment credit facilities in the context of the need to encourage exports. There is a feeling that the period for which preshipment credit is now available at concessional rates of interest is not adequate either because of the longer production cycles of certain commodities or due to factors beyond the control of exporters such as transport bottle-necks, power shortage, non-availability of shipping space, etc. Also, the present structure of preshipment credit is characterised by a multiplicity of interest rates differentiated with reference to specified commodities for varying periods and it is desirable to rationalise this structure by prescribing for all commodities a uniform structure, with interest rates varying only according to the period for which credit is provided.

Bearing in mind the need to provide a fillip to exports by extending the period for which concessional interest is offered and also to simplify the present structure the rates of interest for preshipment credit for all commodities have been fixed as follows with effect from March 1, 1986.

Lending rates for preshipment credit

	(per cent per annum)
i) Upto 180 days	12
ii) Beyond 180 days but not exceeding 270 days	14
iii) Beyond 270 days	16.5

There will be no change in regard to preshipment credit extended against cash incentives and the rate of interest of 12 per cent will continue to be available only upto 90 days. The revised structure of interest rates ensures that majority of exporters will pay lower interest rates for longer periods than at present."
Cashew Bulletin 23(3), 1986, 18

143 Incentives for export promotion

The Minister of State for Finance, Mr. Janardhan Poojary recently informed that in the interest of development of exports, it has been decided to amend Section 80 HHC to provide larger exemption from income-tax to various types of exporters. It is proposed to allow deductions to the extent of 4 percent of the net foreign exchange realisation plus 50 per cent of the remaining net profit. The net foreign exchange realisation will be as defined in the Import-Export Policy.

In order to encourage the activity of execution of projects outside India which is one of the sources of earning foreign exchange, Section 80 HHC will be amended by a separate Amendment Bill so as to secure that the deduction will be admissible of an amount equal to 50 per cent of profits, as against the existing rate of deduction of 25 per cent of profits, from such activity.

Any profits and gains in respect of newly established industrial undertaking in Free Trade Zones is not taxable for five initial years beginning from the year in which such undertaking begins to manufacture or produce articles or things. In order to enable such assessees to avail of this tax benefit in a longer time frame, it is proposed to amend this provision to secure that within 8 years of the year in which the industrial undertaking begins to manufacture or produce articles or things, as assessee will be entitled to avail of this benefit for any five consecutive assessment years at his option.
Economic and Commercial News 16(20), 1986, 6-7

144 Coffee export duty

The export duty on coffee has been doubled from Rs. 300/- per quintal with effect from January 31, 1986.

This is the 34th revision the duty underwent in the last decade. The duty was revised thrice in 1985, and the rate of

Rs. 300/- per quintal prevailed with effect from August 2, 1985.
The Planters' Chronicle, February 1986, 59

145 Cashew exports look up

Both value-wise and quantity-wise, cashew kernels improved their export performance during 1985. Cashew kernel exports rose to 38,123 million tonnes valued Rs. 2237.7 million in 1985 from 31,225 tonnes worth Rs. 1,747.7 million in 1984, representing an increase of 21.97 percent in volume and 28 percent in value. During the year under review, the exports could also fetch higher unit prices, which averaged at Rs. 58.70 per kg against Rs. 55.91 per kg. in 1984. This was reflected in the prices of raw cashew nuts of the new crop arriving in the market.

The major markets which increased their off take of India's cashew kernel, include United States, the Soviet Union, the Netherlands, the United Kingdom, Hong Kong, German Democratic Republic, Federal Republic of Germany and Saudi Arabia. However, exports were less to Australia, Japan, Singapore Kuwait and New Zealand.

Exports of cashew kernels to the United States amounted to 17,960 tonnes accounting for 47 percent of the total exports. This was 6.6 percent higher than in 1984. The United States total imports last year of cashew kernels was around 48,000 tonnes. Of this nearly 45 percent was from India.
Economic and Commercial News, 16(18), 1986, 5-6

IMPORT

146 Taiwan liberalises imports

The Board of Foreign Trade has announced that it will lift import bans on more than 300 commodities including motorcycles, peanuts, fork lifts, watermelon seeds and some chemicals and fish products. New tariff regulations have been revised on January 14 to lower import duties on 197 goods beginning of this year. Of the 197 items, 118 are kinds of cigarettes, liquor and chocolate products. It will also cut maximum tariffs from the current 75% to 67%.
Cashew Bulletin, 23(3), 1986, 4

147 Imports of spices into Dubai

Dubai has a sizeable Indian and Pakistani community of expatriates, who are used to the food habits of the subcontinent. As it is, the local market is full of Indian

spices. Dubai Chamber of Commerce & Industry, Post Box 1457, Dubai may be contacted for details about importers of spices into Dubai.
Spices News Letter, 20(4), 1986, 3

TRADE INFORMATION

148 National Income: 1984-1985

The quick estimates of national income and related aggregates for the year 1984-85 released by the Central Statistical organisation indicate that the national income rose to Rs. 57,014 crores in 1984-85 from Rs. 55,100 crores during 1983-84, registering a rise of only 3.5 percent as against 7.8 per cent during the previous year. On an average, the average real national income grew at a rate of 5.3 per cent during the entire sixth plan period.

The real per capita income grew only marginally by Rs. 11 during 1984-85, from Rs. 761 to Rs. 772.

The net domestic savings during 1984-85 constituted 16.1 per cent (Rs. 31,954 crores) of the net domestic product at market prices as against 16.3 per cent in the previous year.

A significant increase is found in the household savings in the form of financial assets. It rose by 30.3 per cent during the year (from Rs. 14,145 to Rs. 18,434 crores). The total savings of the household sector has gone up by 13.3 per cent. While the savings of the private corporate sector has gone by 23.4 per cent, the net savings of the public sector has gone down remarkably by 34.1 per cent.

The rate of net capital formation kept a pace ahead of the rate of savings (16.1 per cent) at 17.4 per cent. Compared to the last year figures (17.7 per cent) there is a slight decline in the rate of net capital formation.
PIGMY Economic Review, 31(9), 1986, 5

149 Agricultural strategy for seventh plan

A target of production of 178 to 183 million tonnes of foodgrains by the end of Seventh Plan has been tentatively fixed. On the other hand, the targets for sugarcane, oilseeds and cotton (lint), have been fixed at 217 million tonnes, 180 million tonnes and 95 lakh bales, respectively.

The strategy proposed to be adopted for agricultural development during the Seventh Plan would place greater emphasis on low productivity crops with increasing attention on optimum utilisation of irrigation potential, exclusive use of dry land farming practices and adequate and timely supply of inputs of assured quantity at stable prices. Steps would also be taken to ensure remunerative prices to the farmers.

The new strategy also envisages a better deal for the economically backward sections of the society and the backward areas.
Agricultural Situation in India, November 1985, 712

150 The vegetarian boom

After centuries of ridicule, vegetarianism is now a force to be reckoned with in Britain. This is according to an investigation carried out for a BCC television food programme, and featured in the The Listner magazine. But in its turn the meat industry is fighting its ground.

Results of a recent poll showed that there are now about one and half million vegetarians in Britain, and as many people again who no longer eat red meat, but will occasionally have fish or poultry. The growth of vegetarianism seems to be particularly marked among young people in the 16-24 year range. The survey showed that the percentage of vegetarians in that age-group may be as high as 10 per cent. There are several reasons for this growing interest in vegetarianism. A large number of people have been persuaded to reduce or give up their consumption of red meat for health reasons.

Medical research has identified excessive consumption of meat and fat as causes of heart disease and cancer, and a government-commissioned pamphlet, recently published jointly by the British Nutritional Foundation and the Health Education Council, recommends cutting down on saturated fat intake--meaning meat, among other foods--as a way to achieve a healthier heart.

There is concern, too, over food additives and the practice of giving large doses of hormones to cattle in order to improve the taste of the meat.

Of course, the meat industry is worried and is hitting back. Leaner cuts of meat are being produced and sold. This is an ironic turn of events, as in order to produce leaner meat, animals have to be killed younger, before the flavour has matured; and the meat has to be free of the layers of fat which are, in fact, the vehicles of flavour.
The Hindu 18 May 1986, 17

151 Inflation last year was 3.7 p.c.

The inflation rate for the financial year 1985-86 as a whole is estimated 3.7 per cent compared with 7.6 per cent for 1984-85. This estimate has been made on the basis of the wholesale price index for the last week of the year which is now available.

During the last five years, the inflation rate touched the peak in 1983-84 (8.2 per cent). The lowest during this period was 2.4 per cent in 1981-82.
The Hindu, 24 April 1986, 1

152 National poultry board to come up during Seventh Plan

For proper coordination and monitoring of production, processing and marketing of eggs, a proposal is under consideration for establishing a National Poultry Board during the Seventh Plan.

The country has made significant progress in the field of poultry production during the last decade. The annual egg production which was around 7,700 million eggs in 1973-74 has increased to 13,500 million eggs in 1984-85. Broiler production during this period increased from around 9 million to 60 million birds.

Target for the Seventh Plan is to produce 18,900 million eggs and 137 million broilers. In addition to eggs and broilers, Duck and Quail farming has also a considerable potential to be popularised in the rural areas.
Yojana, 30(6), 1986, 5

153 Consumption of oils by vanaspati products

Oils	1978-79		1983-84	
	Lakh tonnes	Percentage to total	Lakh tonnes	Percentage to total
Indigenous				
Sesame	0.36	5.20	0.48	5.30
Cotton seed	1.78	26.20	1.09	11.90
Others	0.18	5.16	0.68	7.44
Total	**2.32**	**36.56**	**2.25**	**24.64**
Imported				
Soyabean	3.93	56.28	4.62	50.54
Rape and mustard	0.04	0.06	0.04	0.39
Imported oil at commercial rate	-	-	1.57	17.14
Palm oil	0.50	7.10	0.67	7.29
Total	**4.47**	**63.44**	**6.90**	**75.36**

Financial Express, 14 March 1986, 9

154 Income - group-wise household consumption of vanaspati: 1982-83

Per capita income (Rs. per annum)	Consumption Tonnes per annum	Percentage to total
Up to 750	36,321	6.9
741-1,210	1,14,018	21.7
1,211-1,400	37,781	7.2
1401-2,500	1,63,420	31.1
2,500 and above	1,73,570	33.1
All sizes	5,25,110	100.0

Financial Express, 14 March 1986, 10

155 Vanaspati factories: 1983

States/Union Territory	Number of factories	Licenced capacity (tonnes)
State		52,800
Andhra Pradesh	6	15,000
Assam	1	60,000
Bihar	3	1,62,000
Gujarat	11	55,000
Haryana	4	15,000
Himachal Pradesh	1	21,000
Jammu and Kashmir	2	33,825
Karnataka	6	9,000
Kerala	2	97,500
Madhya Pradesh	5	2,59,350
Maharashtra	14	15,000
Orissa	1	1,44,000
Punjab	9	1,20,000
Rajasthan	6	40,650
Tamil Nadu	5	2,14,500
Uttar Pradesh	12	1,43,100
West Bengal	6	
Delhi	2	99,000
All-India	96	15,57,225

Financial Express, 14 March 1986, 9

156 Food buying patterns changing

There has been a dramatic shift in total food expenditure from food prepared at home to food eaten away from home between 1969 and 1982, with the average Canadian family spending 13% of its total food dollar on food eaten away from home in 1982, according to Louise Hunt, economist, Food Markets Analysis Division, Agriculture Canada.

The 31% figure compares with 22% in 1969. As a result, the food at home expenditure share fell from 78% to 69%.

While changes in food buying habits were often attributed partially to the increased number of women in the working force, and smaller family size, changes in foods available had made considerable impact as well, she pointed out. Higher food prices and partially prepared foods had prompted consumers to modify their buying patterns.

Between 1969 and 1982, there was a 24% decrease in the proportion of the total food budget allocated to meat, including beef and pork, both down by 32%. Spending on bakery products dropped by 22%, eggs by 47%, canned and dried vegetables by 23%; dairy by 9%; and turkey by 34%.

Consumers increased the share of their food dollar spent on frozen foods by 43%; fish by 37%; fats and oils by 29%, cereal products by 45%; canned and dried fruit by 29% and prepared food by 8%.

Budget shares for chicken, beverages, fresh fruit remained relatively stable.
Food in Canada, October 1985, 8

157 Microwaves big hit in Britain

Ownership of microwave ovens in Britain has increased from 3,000 units in 1974 to an estimated 1.5 million units in 1985, according to a report. The Impact of Microwave Cookers on the U.K. Food Market.

An examination of food consumption trends reveals an increase in frozen food consumption, particularly value-added products such as ready meals, prepared vegetables and further-processed poultry products.

The report analyzes a sample of new products launched in 1985, and discusses new product opportunities in the light of increased microwave oven ownership. Products include ready meals, frozen snacks, soups, desserts, certain vegetables and vegetarian meals.

The volume is available at £40 to members and £80 to non members through the Publications Dept. of the Leatherhead Food Research Assoc. Randalls Rd., Leatherhead, Surrey.
Food in Canada, February 1986, 16

158 Spices Board

The Lok Sabha has passed on February 21, the Spices Board Bill, 1985, and the Spices Cess Bill, 1985 providing for the establishment of a Spices Board and winding up of the Cardamom Board.
The Planters Chronicle, February 1986, 59

FOOD REGULATION, QUALITY CONTROL AND HYGIENE

FOOD REGULATION

159 Tea grading and marking rules

G.S.R. 762 (E):- The following draft of the Tea Grading and Marking Rules, 1985 which the Central Government proposes to make, in exercise of the powers conferred by section 3 of the Agricultural Produce (Grading and Marking) Act, 1937 (1 of 1937), is hereby published, as required by the said section, for the Information of all persons likely to be affected thereby, and notice is hereby given that the said draft will be taken into consideration on or after the expiry of fortyfive days from the date of publication of this notification in the Official Gazette.

Any objections or suggestions which may be received from any person with respect to the said draft within a period of fortyfive days as specified above will be considered by the Central Government.

DRAFT RULES

1. Short-title and application:-(1) These rules may be called the Tea Grading and Marking Rules, 1985.
(2) They shall apply to the tea other than Kangra Valley Tea, derived from the plant of Camellia genus and its species grown in India;
2. Definitions:- In these rules, unless the context otherwise requires:-
(a) "Agricultural Marketing Adviser" means the Agricultural Marketing Adviser to the Government of India;
(b) "Authorised packer" means a person or a body of persons who has been granted a certificate of authorisation under rule 3 of the General Grading and Marking Rules, 1937 in relation to tea;
(c) "Schedule" means the Schedule appended to these rules.
3. Grade designation:- The grade designation to indicate the quality of the tea shall be as set out in column 1 of Schedule I.
4. Definition of quality:- The quality indicated by each grade designation shall be as set out in columns 2 to 9 of Schedule I.
5. Grade designation mark:- (1) The grade designation mark shall consist of a label supplied by the Agricultural Marketing Adviser specifying the grade designation and bearing a design consisting of an outline map of India with the word "AGMARK" and the figure of the rising sun with the words "Produce of India" and "Bharathiya Utpad" resembling the mark as set out in Schedule II.
(2) The size of the grade designation mark in the form of a replica shall be reduced according to the size of the container as per the design given in Schedule III and approved by the Agricultural Marketing Adviser or anyother officer authorised by him.
6. Method of packing:- (1) Tea shall be packed in such a manner so as to allow it to retain its freshness.
(2) Tea shall be packed in pack sizes of 25 gms, 50 gms, 200 gms, 500 gms, 1 kg and thereafter in multiples 1 kilogram.
(3) Where the net weight is above 5 kilograms, tea shall be packed in sound and clean new cloth bags with polythene lining or wooden cases or chests constructed from strong ply-

wood boards lined with aluminium foil of 0.25 mm 10 per cent thickness or tin containers or in such other manner as may be approved by the Agricultural Marketing Adviser.

(4) Where net weight is 5 kilograms or less, tea shall be packed in polythene, bags of paper bags or tin containers in such a manner as may be approved by the Agricultural marketing Adviser.

(5) In all cases the container shall be free from any insect infestation, fungus attack, rodent contamination and also from any undesirable smell.

(6) The container shall be securely closed and sealed in a manner prescribed by the Agricultural Marketing Adviser.

(7) Each package shall contain tea of the same grade designation only.

7. Method of marking:- (1) The grade designation mark shall be securely affixed to every container in a manner approved by the Agricultural Marketing Adviser or any other officer authorised by him.

(2) In addition to the grade designation mark, the following particulars shall be clearly and indelibly marked on the label and/or container;

(a) Serial number of the lot;

(b) Name of packer

(c) Place of packing;

(d) Date of packing;

(e) Net weight; and

(f) Any other particular, as may be specified by the Agricultural Marketing Adviser from time to time.

(3) An authorised packer may, after obtaining the prior approval of the Agricultural Marketing Adviser or any other officer authorised by him in this regard, mark his private trade mark on a container in a manner approved by the said officer, provided that the private trade mark shall not represent quality or grade of the tea different from that indicated by the grade designation mark affixed on the container in accordance with these rules.

SCHEDULE-I
(See rule 3 and 4)

Grade designation and definition, of quality of Tea*

Trade Designations	Definition of quality					
	Special Requirements					
	Total ash per cent by weight	Total ash soluble in boiling distilled water per-cent by weight (minimum)	Ash soluble in HCL per cent by weight (Maximum)	Water soluble extract per cent by weight (minimum)	Alkalanity of soluble ash expressed as K$_2$ per cent by weight	Crude fibre per cent by weight (maximum)
1	2	3	4	5	6	7
Special	5.0 (Minimum)	40.0	0.5	35.0	1.0 (Minimum)	13.0
Standard	7.0 (Maximum)	40.0	1.0	32.0	2.2 (Maximum)	16.0

Loss in mass at 103 C, per cent by weight (Maximum)	General Requirements
8	9

Tea shall:-

7.0 (1) be the product derived e:clusively from leves buds andtender stems of plant of the genus Camellia and its species known to be suitable for tea making;

7.0 (2) be brownish-black, or jet black in colour and reasonably free from blistered, chophy, stalky, grey leaves and fairly free from hard stalks and fibre;

(3) be free from impurities, any extraneous matter, mould, dead, or live insects, rodent contamination, added colour and flavour, exhausted tea leaves, off flavour and any other deleterious substances;

(4) produce a liquor having fresh, clear, pleasant, characteristic taste and flavour with fair colour, risknes, body and strength free from taint. The infusion shall be neither brown dark nor green in colour;

(5) On sieving 50 gms (of tea) in a Simon Laboratory sifter on IS 500 micron sieve for two minutes, not more than 4 per cent of material by weight shall pass through,

*Shall not apply to tea commercially known as Kangra Valley Tea produced in Kangra Valley and its adjoining area, Mandi (H.P.), Dehradun (Uttar Pradesh) and Badaga (Nilgiris) which has been defined under the Kangra Tea Grading and Marking Rules, 1975.

Note: (1) The limits specified under columns 2, 5 and 7 are on dry weight basis, i.e. after drying the tea to a constant weight at 100 C.

(2) Water soluble extract is the extract obtained by boiling dry tea with 100 parts of distilled water for one hour under reflux.

Definitions:

Blistered: are those tea leaves affected during manufacturing process due to over heating.

Chophy: are the tea leaves excessively cut during manufacturing.

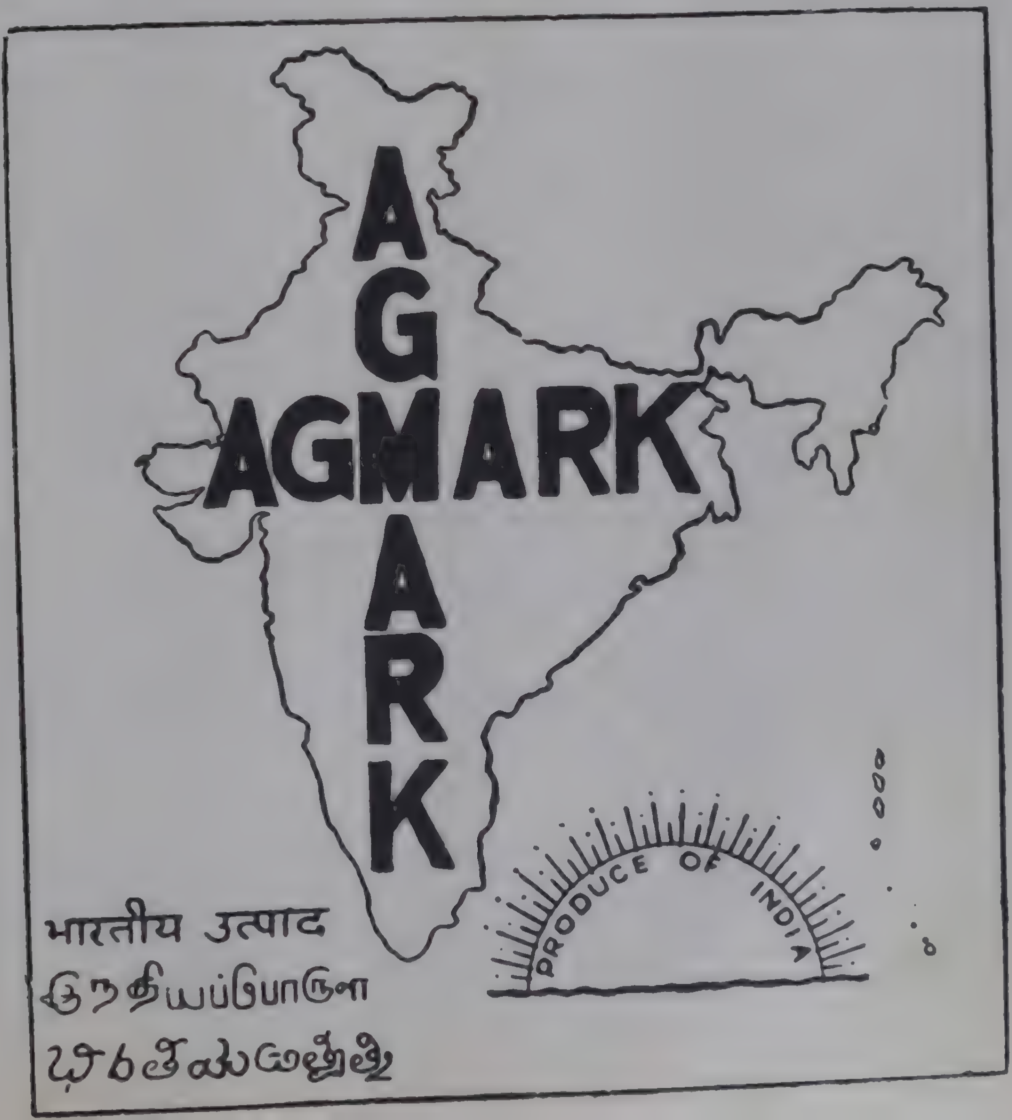
Stalky: means tea containing an abnormal amount of stalks which is undesirable from the appearance point of view.

The Gazette of India Part II, Section 3, Subsection (i), No: 434, 25 September 1985

SCHEDULE-II

[See rule 5(1)]

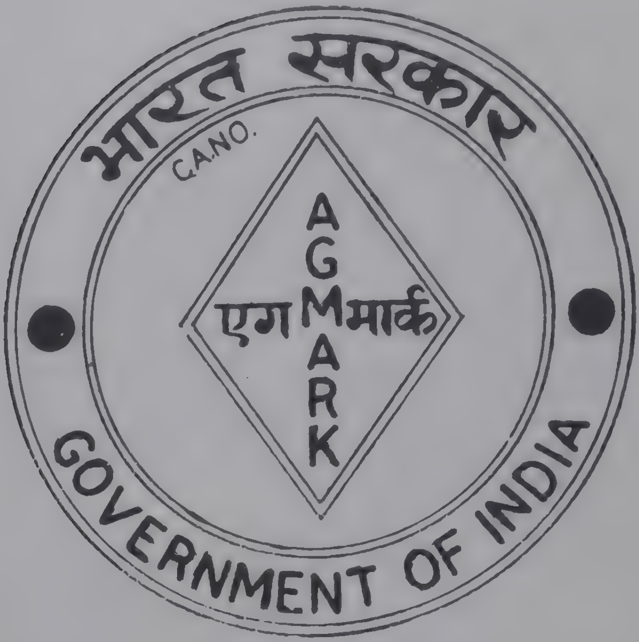
Design for the grade designation mark



SCHEDULE-III

[See rule 5(2)]

Design of Replica



160 Prevention of food adulteration (2nd Amendment) Rules 1986

G.S.R. 507(E):- Whereas certain draft rules further to amend the Prevention of Food Adulteration Rules, 1955, were published as required by sub-section (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954), with the notification of the Government of India in the Ministry of Health and Family Welfare (Department of Health) No.G.S.R. 542 (E) dated the 2nd July, 1985 in the Gazette of India, Extraordinary, Part II, Section 3, Sub section (i), dated the 2nd July, 1985 at pages 1-4, inviting objections and suggestions from all persons likely to be affected thereby before the expiry of ninety days from the date on which copies of the Gazette of India in which the said notification was published, were made available to the public.

And whereas the copies of the said Gazette were made available to the public on 2nd July 1985;

And whereas the objections and suggestions received from the public on the said draft rules have been considered by the Central Governments;

Now, therefore, in excercise of the powers confered by sub-section (1) of section 23 of the said Act, the Central Government after consultation with the Central Committee for Food Standards, hereby makes the following rules further to amend the Prevention of Food Adulteration Rules. 1955. namely:-

RULES

1.(1) These rule may be called the Prevention of Food Adulteration (2nd Amendment) Rules, 1986.

(2) They shall come into force immediately on the expiry of one year from the date of their publication in the Official Gazette.

2. In rule 49 of the Prevention of Food Adulteration Rules, 1955, in sub-rule (5):--

(a) in clause (iii), the word "and" occurring at the end shall be omitted;
(b) in clause (iv) the word "and" shall be inserted at the end;
(c) after clause (iv), the following clause shall be inserted namely---

"(v) Containers made of plastic materials not conforming to the following Indian Standards Specification used as applicances or receptacles for packing or storing whether partly or wholly, food articles, namely:--

(a) IS:10146-1982 (Specification for Polyethylene in contract with foodstuffs);
(b) IS:10142-1982 (Specification for Styrene Polymers in contact with foodstuffs:
(c) IS:10151-1982, (Specification for Polyvinyl Chloride (PVC) in contract with food stuffs)
(d) IS:10910-1984 (Specification for Polypropylene in contact with foodstuffs)"
The Gazette of India Part II-Section 3-subsection (i) No: 134, 19 March 1986

161 Aseptic cups to include polycarbonate resin?

In response to a petition from General Electric Co., FDA has ruled to allow hydrogen peroxide sterilization of containers including polycarbonate in the food contact layer. With FDA's okay, effective Nov. 15, 1985, GE is hopeful that more aseptic packagers will consider use of structures that include a layer of polycarbonate combined with EVOH for sufficient gas/moisture barrier.

According to Thom Heaps, general manager of GE's GEPAX Engineered Plastics Packaging, benefit of using polycarbonate in the structure is a shelf life extended three to fourfold over conventional co-extruded barrier sheet. But the trade-off is an up-to 15 per cent increase in cost.
Packaging, January 1986, 11

QUALITY CONTROL

162 New FAO project on food quality control

On 9 April, Dr. E. Bojadzievski, FAO Representative in India and Bhutan, and Mr. D.P. Bagchi, Joint Secretary, Ministry of Commerce, signed an agreement between the UN Food and Agriculture Organisation and the Government of India, on the strengthening of training in quality control and preshipment inspection of food products, in Udyog Bhawan.

Under this project, two FAO experts in qualility control and export inspection and a legal consultant will visit India to assist in the preparation of local training programmes in food quality inspection and export, health and quality supervision. The legal consultant will assist in analysing legal requirements for the export of food products to importing countries. Later on, two Indian officials will visit USA and Holland to examine food inspection procedures at principal ports of entry.

The project is financed by FAO's own Technical Cooperation Programme, which allocated $ 134,000.
UN Weekly Newsletter, 37(14), 1986, 1

163 The International Symbol for irradiated foods

The international symbol for irradiated food is being considered by the Food and Drug Administration for adoption as part of the labeling requirements for food treated with radiation for preservation. The FDA is developing new rules for the labeling of irradiated foods and has reportedly reached a compromise between proponents and opponents of the process. Labels must now use the wording, "treated with ionizing (or gamma or electron) radiation". This phrase is hampering the use of the process because consumers misunderstand the meaning of "radiation" for this use. Studies have shown that the public mistakenly links "radiation" with "radioactivity" . The proposed rules are expected to allow wording such as "treated with radiation to control spoilage" so that the positive aspects of the process may be included. The hope is that the use of the international logo (already being used in many other countries), along with an educational campaign, will help the public understand the process and choose whether to buy such products.
Cereal Foods World, 31(2), 1986, 205

HYGIENE

64 Mercury-free hygienic wall coating

An hygienic wall coating, which is mercury-free and has a service life of at least twelve years, has been introduced by Industrial Protective Coatings (UK) Ltd of Unit 22, Holland Park Industrial Estate, Holyhead, Anglesey LL65 2PU.

IPCO 530 polyurethane hygiene coating conforms to the EEC Craft Directive on health requirements for heat treated milk (R/3187/78 AGR 1881).

It will prevent mould infestation, even on soiled surfaces and, being fungicidal, it neither nourishes mould fungi directly nor allows any dirt adhering to it to nourish fungi.

IPCO 530 provides a smooth, glossy surface, which is naturally dirt repellant and does not flake. As it is mercury-free, no evaporation occurs and the high gloss is maintained. Steam cleaning can be carried out on a regular basis, if necessary.
Food Trade Review, September 1985, 450

165 The garlic cure

Recent researches have shown that garlic could be an effective cure for obesity. Scientists at the haemorraeology unit of the Munich University have found that garlic is a fat-reducing agent. An official report based on the research said tablets of garlic helped reduce cholestrol levels in 10 out of 20 patients under examination.

Another report published in a Chinese official medical journal claimed that an extract of garlic is a cheap and most effective medicine for meningitis. While garlic extract provided nearly 82 per cent cure, the currently used modern drug -- amphetericin--cured hardly 15 per cent of the meningitis cases. The report claimed that garlic lowers blood pressure, blood sugar level in diabetics, cures some types of cancerous tumour besides being an excellent intestinal antiseptic.

In Russia, garlic was being used as an antibiotic and prescribed in cases of senility, heart diseases and menstrual disorders by practitioners of conventional system of medicine, the report said.
Financial Express, 20 May 1986, 2

166 Tea prevents cancer

A cup of tea every day may reduce the chances of having cancer, according to doctors at the Chinese Academy of Preven-

tive Medicines. Experiments carried out by the academy show that five grams of tea every day can reduce the internal synthesis of nitrosamine compound, a major carcinogen, press reports here said.
Deccan Herald, 31 May 1986, 9

167 Link found between diet and cancer

An Australian Commonwealth Scientific and Industrial Research Organization (CSIRO) study has linked a high-protein diet with bowel cancer, particularly in women. Scientists in Adelaide began their study six years ago and surveyed 400 people with colon or rectal cancer. The study found that the people who eat more protein also eat more fat, are likely to eat more often and to have a higher food energy intake. The high total kilojoule intake and meal frequency were found to be associated with an increased risk of bowel cancer.

The study also revealed that a high-cereal-fibre intake increased the risk of women contacting the disease but suggested that vitamin C helped to protect against rectal cancer. Vitamin C is a known antioxidant and can reduce the absorption of the carcinogenic substances known as nitrosamines, sometimes found in preserved meats and other food.

The analysis also found that the relation between risk of colon cancer and alcohol consumption was stronger for women than men. In their sample, women who drank one glass of spirits a day had twice the risk of bowel cancer as irregular drinkers.

The study showed that women who had borne a number of children had a higher degree of protection from bowel cancer than women who had no children. Oral contraceptives were also shown to reduce the risk of colon cancer in women.
PTI Science Service, 5(9), 1986, 25-26

168 Bengal gram helps check heart attacks

Bengal gram consumption can help prevent atherosclerosis (hardening and narrowing of arteries) which leads to heart attacks and strokes. This was stated by Dr. (Mrs). Malathi Madhavan, Head of the Pathology Department of the Postgraduate Institute of Basic Medical Sciences (PGIBMS), Taramani in Madras.

She said that experiments on animals had confirmed that Bengalgram had a definite effect on the arteries which normally grow narrower with a regular intake of high fat content food that leaves deposits within the artery thereby constricting the blood vessel.

Bengal gram, she said, contained the chemical, isoflavone, which had a similar molecular configuration as the female hor-

mone estrogen, which also prevented narrowing of arteries. This explains why women are less prone to atherosclerosis, she said.
PTI Science Service, 5(7), 1986, 9-10

169 Histamine threat found in oil sardines

Histamine toxicity was first recognised with mackerel, and it is usually called scombroid or scombrotoxic poisoning. The effects are usually like gastroenteritis and it is a recognised problem in many pelagic fish, particularly tuna and skip jack.

It is produced from histidine, one of the natural constituents of fish protein, by enzymes released by bacteria which grow in the fish after death. The problem seems to arise with warm rather than cold water pelagic species. No work had previously been done on histamine in t Indian oil sardine, **Sardinella longiceps.**

As part of the programme, Dr. Geoffrey Ames of Tropical Development and Research Institute has been working at Central Institute of Fisheries Technology on the oil sardine. Trials showed that if the sardines are kept in ice or at 10 C then no histamine forms, at least until after the fish become putrid. But if the sardines are kept at higher temperatures, from 16 C quantities of histamine well above the accepted safety limits are formed, even though the fish still appear quite edible.

There was a surprising variation in the histamine content between individual fish landed in one batch which was stored at temperatures from 16 to 31 C. Some fish contained fifteen to twenty times as much histamine as others.

Ice is widely used in many parts of India, and provided the sardines are iced quickly there should be no danger of histamine developing. But if the fish are left for any length of time at ambient or intermediate temperatures then histamine could present a health hazard.
Fishing News International, 25(4), 1986, 10

170 Anaerobic fermenter

Waste products from industries such as food, brewing, distilling and pharmaceuticals can be treated cheaply and efficiently using a modular anaerobic fermenter from Britain. The treatment of effluent has become increasingly important, both environmentally and economically, with benefits including the recovery of chemicals and heavy metals which can be reused, the production of methane which can be used as an energy source and also the removal or bioconversion of toxic chemicals. The anaerobic process can deal with high-strength waste efficiently, and unlike the aerobic method of treatment it produces little sludge. The modular anaerobic fermenter has been developed to give users complete flexibility of operation. The

plant can be extended at any time by linking two or more reactors in series or parallel to treat increased quantities of effluent. In addition, each reactor is capable of dealing with variation in flow and/or concentration of effluent. The reactor is completely enclosed to eliminate the possiblity of smell or waste leakage and is manufactured to international design codes. Skid mounting allows the reactor to be moved easily, and eliminates the need for expensive foundations. For further information write to: Biomass International, P.O. Box 54, Chester CHI 3XY, UK.
Industrial Products Finder, 14(7), 1986, 125

TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES

171 Iodised salt unit goes into production

A Rs. 14 lakh iodisation plant based on technology developed by the Central Salt and Marine Chemicals Research Institute, Bhavnagar (CSIR Laboratory), has just gone into production at Kichcha village in Nainital district of U.P.

Iodised salt produced by this plant has uniform iodine coating and is more stable. It will produce 36,000 tonnes of iodised salt a year, and has provision for another 36,000 tonnes capacity by a second shift working.

With the commissioning of this plant, the CSMCRI has given a technology for combating goitre, a mission-oriented programme of the Government of India. About 170 million people are exposed to endemic goitre at present. By 2000 A.D. the population to be protected against goitre will rise to 200 million. On the basis that each individual requires about five kg salt a year, a single plant of capacity 36,000 tonnes can provide iodised salt for nearly seven million people. Allowing for population increase in the next one and a half decade, it has been worked out that 30 such plants will be needed. The CSMCRI can install iodisation plants in various capacities from a cottage scale ranging from 10 kg to 100 kg (labour oriented) to 125 tonnes (mechanised) per day.
The Hindu, 17 May 1986, 6

172 First soya milk plant

Soya milk, a non-allergenic high protein nourishing drink devoid of cholesterol and lactose is to be produced for the first time in India on a commercial scale.

Noble Soya House, a company launched by two Indian technocrats, Mr. Sham Pherwani, President of the Company and Dr. A.S. Aiyar, ex-Executive Director of PFNDAI have secured technical collaboration from 'Kibun', a Japanese company, for the aqueous extraction of soybeans to produce a bland product, at a cost of $1,20,000. Also, a Swedish company, Alfa-Laval is to provide the processing equipment at a cost of Rs. 3 crores.

According to the two technocrats, all the necessary arrangements for producing milk at the rate of 19 million litres a year, were almost over and the Company is expected to start production by early November. Within 90 days, the plant would start producing at its full capacity.

The Company will import tetrabrik machine specially for making laminated paper boxes, whose guaranteed life would be three to six months without refrigeration. The paper boxes, each containing 200 ml of milk will have no breakage and could be kept for sale in restaurants and shops.
PFNDAI News Letter, No: 3, 1986, 6

173 Canadian backed oil plant opens in India

A $ 10 million oilseed processing plant has been built here with funds provided by the Canadian International Development Agency. Construction of the facility, which has a capacity to process 200 tonnes of mustard or rapeseed oil a day, was financed with funds generated from the sale of Canadian canola oil in India.

Canada is providing $ 75 million worth of canola oil over five years to the National Dairy Development Board of India to support the creation of cooperatives of Indian farmers and to encourage them to produce more oilseed crops. The project is being administered for CIDA by the Cooperative Union of Canada.

The goal is to increase oilseed crop production, to improve income of oilseed farmers and contribute to the stabilization of prices and supplies of edible oils in India.
Food in Canada, February 1986, 8

174 Rice bran oil project agreement signed

The Government of India and the Food and Agriculture Organization of the United Nations (FAO) signed a new project agreement aiming at increasing the production of edible oil recently. Mr. S.V.M. Tripathi, Joint Secretary, Ministry of Food and Civil Supplies signed the agreement on behalf of the Government of India and Dr. E.Bojadzievski for the FAO. The project will assess the feasibility of extraction of the rice bran oil by pressing, in plants installed near rice mills. This process is new in India and has been used with considerable success in Japan and China.

Under the project, two Indian specialists will visit China, Burma and Thailand to study the technologies applied in these countries. A foreign expert on rice bran oil extraction will visit India to make a technical and economical appraisal of the scope for mechanical rice bran oil extraction. This visit will coincide with the rice milling season in China and India. The project is financed by FAO's own Technical Cooperation Programme.

A project has been approved for FAO assistance for studying and improving technology for production of rice bran oil. This includes study tours and training for Indian specialists in countries where rice bran oil technology has been developed and is in use, as well as a consultancy by an FAO expert in India on rice bran oil extraction, during which the technical and economic appraisal will be made of mechanical rice bran extraction.
Economic and Commercial News, 16(9), 1986, 7-8

PERSONALIA

175 ISI Director General

Mr. K.R. Paramesvar took over as Director General of the Indian Standards Institution on May 16, a release of the ISI issued here on Monday said.
Financial Express, 20 May 1986, 7

176 Director of Technology Mission on Oilseeds

Dr. M.V. Rao, agricultural scientist has taken over as Director of the Technology Mission on Oilseeds, and Special Secretary to the Government in the Department of Agricultural Research Education.
The Hindu, 27 June 1986, 6

RAW MATERIALS

77 Giant rice

A Japanese research institute has developed a new type of rice with grains the size of peanuts. The new rice has grains about three times as heavy, two and a half times as long and one and a half times as wide as normal Japanese rice, said Tadashi Takita of the Ministry of Agriculture, Forestry and Fisheries, Kyushu Agricultural Research Laboratory recently. Each grain weighs about 60-70 mg compared to the normal 20-22 for Japanese rice.
Deccan Herald, 3 July 1986

STORAGE AND INFESTATION CONTROL

78 Coating extends fruit life

Amateur gardeners and "pick your own" enthusiats can extend the storage life of fruit after picking with an inexpensive coating from Britain which delays the ripening process. A simple-to-use kit, is suitable for apples, pears, cherries and invisible and tasteless sugarbased film which is non toxic and edible. It restricts the rate at which gases and water vapour move across the fruit skin, slowing down respiration and metabolism and retarding ripening. The increase in storage time varies according to the ripeness of the fruit when treated, but the natural life can typically be extended by four months for apples, four to six weeks for pears and two to three weeks for cherries and plums. Fruit to be coated must be free of blemishes, bruises and blight and longest storage is achieved when it is picked just before ripe. Included in each kit is a sachet of fruit coating, and a dipping net; one pack treats up to 100 lb (45 kg) of fruit. The cleanser is dissolved in 7 litres (1-1/2 gallons) of water and the fruit is gently agitated in the solution in the dipping net to clean and sterilise it. Once drained and dried, the fruit is then immersed in the coating which is made into a creamy solution with 3 litres (6 pints) of warm water. After being placed on trays or racks to dry, the fruit is stored in the usual way in a cool, dry place with an adequate airflow. All ingredients used in the kit are approved by the USA Food and Drug Administration, the EEC, the World Health Authority and the Food and Agricultural Organisation, the company reports. For further information write to: Proinsa Ltd., PO Box 444, Maidenhead, Berkshire SL6 7RW, U.K.
Industrial Products Finder, 14(9), 1986, 14

179 Insulated container for canned drinks

With its new Minicool container a Dutch company has found a way of keeping canned drinks very cold between 3 and 4 hours. The basic material used in "Hostapor D" (polystyrene) which is harmless to the environment. The Minicool shown here is 12 cm high and 7 cm in diameter, with a wall thickness of 3 - 1/2 mm. Containers can, however, be supplied in any desired format and with any printed text. The Minicool is made of long-lasting materials, and is not meant to be a disposable product. The container is highly suitable for carrying text for advertising purposes. It has already proved very successful in this respect. Applications for design protection have been filed and the trade mark has been registered. For further information write to: Emce B.V., Postbus 7, 3632 ZR Loenen a/d Vecht, The Netherlands.

Industrial Products Finder, 14(9), 1986, 56

FOOD ADDITIVES

Nil.

PROCESSES

180 A new cheese process

Chr. Hansen's Laboratories A/S, Copenhagen, Denmark, and Genencor, Inc., South San Francisco, California, who have been cooperating since 1983 in producing genetically engineered chymosin to develop a new cheese process, will conduct cheese trials at pilot scale this autumn, based on rennin produced from filamentous fungus Aspergillus.

Earlier, in June 1984, first cheese trials were run, using genetically engineered chymosin produced by means of the bacterium E. coli, which was prepared in an inactive form and then refolded to the active conformation, using a proprietary process. Since then, research has been directed toward the use of an active form chymosin which may be introduced directly onto the fermentation broth. The cheese trials are now being conducted to perfect this completely new process.

The collaboration between Chr. Hansen's Laboratories and Genencor has previously resulted in the development of a proprietary enzyme system to accelerate flavor development in cheese. This system is being currently marketed in the United States under the trade name, Flavorage, and will later be introduced to other markets.
Food Technology, November 1985, 102

1 Sugarcane juice preservation

The Department of Agricultural Processing and the Department of Biochemistry of Tamil Nadu Agricultural University have developed a process for preserving sugarcane juice for six months.

The juice extracted from peeled sugarcane using a cane crusher is filtered with a muslin cloth and sterilised by keeping it at 80 C for ten minutes. Lime and ginger juice is added to improve the taste. The sterilised juice is then cooled to room temperature and the preservative, potassium meta bisulphite (KMS) is added at 350 ppm level and the juice is filled in sterilised bottles and sealed.
Documentation Bulletin, No: 63, 1986, 11

32 Thermal processing of fish

Thermal processing has been developed for two new products "breaded fish" and "frozen fish curry".

In the process for breaded fish, small varieties of fish are cleaned by removing the head, tail, scales, etc. and are dipped in brine followed by draining on perforated trays. The fish on trays are subjected to thermal processing in an autoclave. The processed fish then undergo freezing in blocks in shallow trays avoiding air space.

For preparing frozen fish curry, the fish are cleaned as in the above process, washed well and steam cooked with brine. The cooked liquor is separated by draining. The pre-cooked fish is thermal processed in an autoclave for a specified time. The gravy is prepared using condiments, spices and sour ingredients which is cooked in the liquor separated earlier. The gravy is poured in trays where the required number of fish are arranged in the gravy and are transferred to a freezer. The frozen blocks are packed and frozen stored.
Documentation Bulletin, No: 63, 1986, 11

BY-PRODUCTS AND WASTE UTILIZATION

PROCESSED PRODUCTS

Nil.

EQUIPMENT AND MACHINERY

183 Solar cooker-cum-oven

Marketed under the trade name Surya Kiran, Matris solar cooker-cum-oven, can be used for cooking, baking and boiling. It is provided with castor wheels for easy manoeuvrability. Cooker is fitted with reflector mirror and double glass. The complete construction is of heavy gauge mild steel, finished in attractive spray enamelled colours. For further information write to: Matri Instruments and Chemicals (P) Ltd, B-3/B-4 Industrial Estate, Mettupalayam, Pondicherry 605010.
Industrial Products Finder, 14(9), 1986, 127

184 Bellows pumps

The KB series pumps are mechanical reciprocating bellows type metering pumps completely compact, simple and of robust design. The reproducibility of these pumps are ± 1% and they are leak-proof and chemical resistant. The pump heads are of polypropylene and valves of elastomeric. It has unique eccentric cam for easy stroke adjustment, at rest, down to 10% of full stroke. The blow moulded bellows with uniform wall ensures 24 hour service. KB series multiplex types are available for proportioning of two or more liquids. Independent adjustment is possible for each flow rate. These pumps are used mainly in the fields of film processing, chemical laboratory, polymer feed, food machines and sterilizers. Viscosity is up to 3500 cp of newtonian fluid when flow is limited to 80% and reduction gear with 1/100 ratio is used. The pumps are manufactured by Iwaki Co. Ltd., Japan and are available against Actual User's Import Licence. For more details write to: Syp Engineering Corporation, 4 Patel Indl. Estate, S.V. Road, Dahisar (East), Bombay 400 068.
Chemical Products Finder, 4(4), 1985, 4

185 High vacuum pump

The Aerovac high vacuum pump is basically oil immersed, rotary vane type. The rotor is provided with two vanes, and it is mounted eccentric with main body. As the rotor rotates the vanes sweep the cresent shaped air space twice in each revolu

tion. The vanes maintain close contact with main body by spring force. The material of construction is graded cast iron. All parts are precisely machined and ground smooth to close tolerances for better perforamance. The capacity of pump ranges from 32 to 10,000 LPM in single and double stage construction. The pump can be used in chemical, pharmaceutical, laboratories and food packings. Also offered are water ring vacuum pump, gear pump, SS centrifugal pump, milk pump, blowers, dry vacuum pump, and vacuum-pressure pump. For further information write to: Aristo Tec, Enterprises, im-mayur, Hirabag Society, Mininagar, Ahmedabad, Gujarat 380 008.
Chemical Products Finder, 4(4), 1985, 45

186 SS magnetic drive pump

Iwaki Co. Ltd., Japan, manufacture the MDU series stainless steel magnetic drive pumps. The pumps are sealless centrifugal pumps with stainless steel casting and SS wetted parts, featuring a high flow rate and a low head. MDU series pumps are in 5 models, each providing excellent fluid-transferring capability over an extensive range of applications, including the transfer of organic solvents. Since no shaft seals are used, corrosion, leakage and problems of maintenance are eliminated. Main components of the pump are made of corrosion resistant materials such as SUS 316, carbon and Fluoro-plastic. MDU Series pumps are suitable for transferring various corrosive chemicals, organic solvents, sea water, etc. Other applications are in plants for processing, testing chemical products, food producing machines, pharmaceutical plants, etc. For further information write to: Syp Engineering Corporation, 4 Patel Indl. Estate, S.V. Road, Dahisar (East), Bombay 400 068.
Chemical Products Finder, 4(4), 1985, 45

187 Screw pumps

Bornemann (India) Limited manufacture screw pumps in three versions, viz., single screw, twin screw and triple screw pumps in collaboration with John Heinr Bornemann GmbH and Co. K.G., Fed. Republic of Germany. These pumps find applications in industries such as breweries, sewage treatment, food processing and thermal plants. The pumps are produced in various sizes and pressure ratings. Unlike centrifugal pump, screw pumps do not need any suction and pressure valves which cause flow resistance and may develop faults. The screw pumps have continuous delivery. The pumps are self priming type and run free of contact. For further information write to: Bornemann (India) Limited, 10 Meghdoot, 94 Nehru Place, New Delhi 110 019.
Chemical Products Finder, 4(4), 1985, 43

188 Chemical pumps

RCF manufacture chemical pumps in polypropylene and SS suitable for a range of applications, ranging from the food industry to surface treatment and chemical industry. The pumps are fitted with mechanical seals or gland type arrangements. These are leakproof, maintenance-free, compact, temperature and chemical resistant. These come in sizes from 6 to 100 mm and capacities from 6 to 800 LPM. For further information write to: Raj Chemical Pumps;, 2/16 Makani Industrial Estate, Balaram Patil Road, Bhayander (East), Dist. Thane, Maharashtra 401 101.
Chemical Products Finder, 4(4), 1985, 31

189 Teflonplug valves

Mechanical Seals and Packing Industries have introduced PTFE plug valves made up of 100% PTFE. The valves can be used in varied industries from highly corrosive chemicals to pharmaceutical industries upto temperatures of 200 C and come in sizes from 12.70 mm to 76.20 mm with both screwed and flanged ends. A feature of the valve is its resistance to most severe chemicals and temperature environments. For further details contact: Mechanical Seals and Packing Industries, 112 N.M. Road, Zaveri Bldg., Bombay 400 023.
Chemical Products Finder, 4(4), 1985, 41

190 Butterfly valves

Dynamic Industries manufacture a range of butterfly valves which provides dependable flow control. The range covers 50 mm through 900 mm in flange/wafer design with pressure rating upto 20 kg/cm^2 . The valves are used for severe service such as radioactive gases, corrosive chemicals, high temperature fluids, etc. due to incorporation of bodyliner of suitable material (such as SS 316, monel, alloy 20, hastelloy, ceramic and HDPE). Valves are equipped with manual, pneumatic-rotary or liner, electric actuator with required accessories and manual failsafe arrangement. For further information write to: Dynamic Industries, Narendra Estate, Senapati Bapat Marg, Opp: Kamgar Stadium Dadar, Bombay 400 028.
Chemical Products Finder, 4(4), 1985, 45

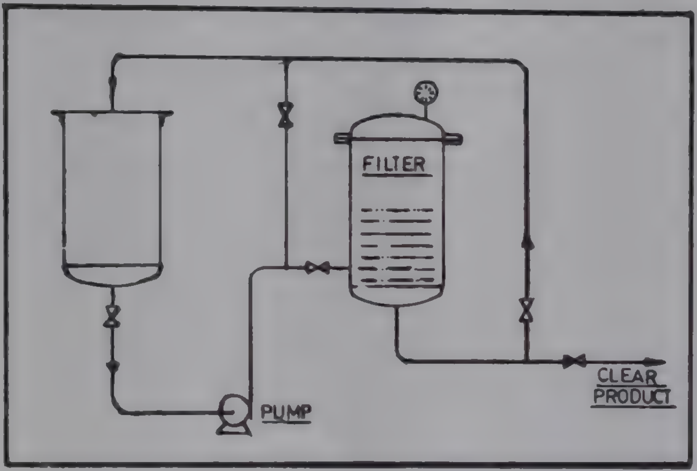
191 Stainers/Filters

Jaypee manufacture a range of filters/strainers to suit applications wherever dirt and solids are to be separated from liquid or gas in production, extraction and filtration processes, conforming to standards such as IS, ASME, DIN, BS and as per user's requirements in pipeline sizes upto 1,200 mm and 600 kg/cm^2 pressure. The range of filters includes Simplex filters with/without divertor valves, duplex filters with manual change-over, back flushing filters, steam jacketed, magnetic and automatic self-cleaning filters-motorised with or without

remote control relay panels, 'Y' type, 'T' type, conical, plate type, box type filters, filter bags, cartridge filters, air filters, pressure regulators, moisture separators and lubrictors, check, pressure relief, needle and isolating valves, etc. Also offered are pressure filters and custom built filtration plants. Applications include to purify oils, alcohols, organic solvents, juices, beer, etc. Jaypee also fabricate pressure vessels, heat exchangers, gas dryers and loading arms. They also offer strainers manufactured by their principals, Zurn Industries, Inc., USA. For further information write to: Jaypee Industries Private Limited, B-62, Okhla Industrial Area, Phase-1, New Delhi 110 020.
Chemical Products Finder, 4(4), 1985, 63

192 Pressure filters

Technical Products manufacture single/multiple leaf pressure filters for duties requiring polishing of filtrate to sparkling clarity. The system is particularly suitable for turbid solutions having difficult to filter slimy solids, which would quickly clog up the filtration surface on the conventional press and frame filters. For further information write to: Technical Products, Amar Brass Compound, 159(0), S.G. Barve Marg, Vidya Nagari, Bombay 400 098.
Chemical Products Finder, 4(4), 1985, 9



193 Basket filter

Superbflo manufacture a range of basket strainers for varied applications. The range includes cone strainers, disc pack filters, micron filters, Y strainers, steam jacketed basket strainers, self-cleaning filters, lube oil systems, fuel oil systems and hydraulic oil systems. They have developed filters to a working pressure of 800 kg/sq cm and filtration clarity up to 0.5 microns. The basket strainer body and cover are made of cast iron, steel, stainless steel, or bronze. The filtering elements is from stainless steel mesh, bronze mesh or

any other material to suit the liquid and pressure. The company can provide duplex basket strainers where continuous flow of fluid is required wherein the flow is diverted through a clean basket while the clogged one is being cleaned. To facilitate the straining of liquids that tend to solidify at ambient temperatures steam jacketed basket strainers can be also offered, it is said. Applications include all grades of oil, distillates, water, chemicals, beverages, paints, pulp and industrial liquids. For more information write to: Superbflo Filters Mfg. Co., 80/635 Road No.2, Motilal Nagar-1, Goregaon (West), Bombay 400 062.
Chemical Products Finder, 4(2), 1985, 5

194 Pulveriser

Unique Engineering Industries manufacture a pulveriser that pulverises any dry material without generating heat and without damaging the quality of the raw material. The unit may be useful for pulverising foodstuffs, spices. It is available in different models to pulverise material from 7 kg to 1 tonne per hour. It reportedly requires less power and its design enables to function it without a foundation. As there is no direct pounding no spares wearout. There is no dust and the working is silent. The mesh of the pulverised material can be adjusted by changing the stieve. The user can adjust the mesh size from 10 mesh to 150 mesh. 300 mesh also can be had from a machine having top suction. For further information write to: Unique Engineering Industries, 9, Verma Lay-out, Near North Ambazari Road, Nagpur, Maharashtra 440 010.
Chemical Products Finder, 4(4), 1985, 33

195 Jupiter micro pulveriser unit

Goodwyn Industries Corporation (India) manufacture the Jupiter micro pulveriser unit which reportedly provides maximum output with minimum power consumption. This pulveriser unit sieves and collects in one single operation. Features include: carbided hammers for long life, screens to control output particle size, heavy duty vibration-proof base plate of cast iron, high RPM and compact size. The unit is available in 5, 10, 20 and 40 HP models. It finds applications in spices, cattle feed, poultry feed, food, pharmaceuticals, chemicals and foodstuff. For further information write to: Goodwyn Industries Corporation (India), Goodwyn House, 95-A, Shankarshet Road, Pune, Maharashtra 411 037.
Chemical Products Finder, 4(3), 1985, 61

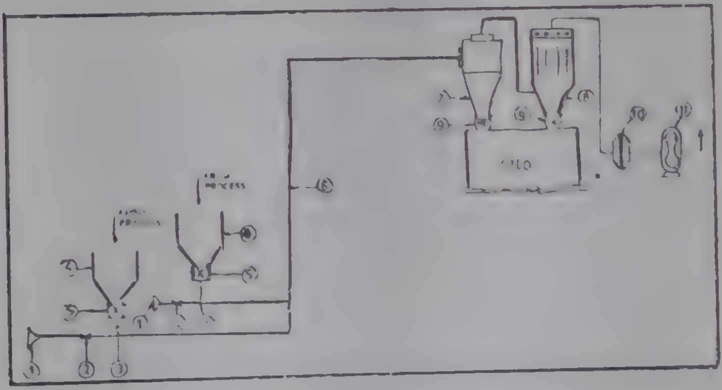
196 Micro pulveriser

Precision Products, Vatva, Ahmedabad, manufacture the Bombay Micro Pulveriser. The micro pulveriser can grind material in fineness up to 250 mesh and is a close clearance, high speed hammer mill suitable for wide range of materials. It also provides accuracy in mesh control. The simplified design of micro pulveriser makes all parts easily accessible for quick cleaning and immediate inspection. Micro pulveriser comes in three types: MS construction, MS construction with stainless steel lining on grinding parts, and grinding chamber and grinding parts entirely made out of stainless steel. It is offered in three models. For laboratory purposes small size pulveriser with manual and automatic feeding is also available. For further information write to: Jayems Engg. Co.Pvt Ltd., Great Western Bldg., 1st Floor, 130/132, Apollo Street, Bombay 400 023.

Chemical Products Finder, 4(3), 1985, 63

97 Pneumatic conveying systems

Universal Air Systems manufacture pneumatic conveying systems for transporting small to medium quantity of free flowing solids. Three basic systems option are available viz., vacuum system, pressure system, and vacuum pressure system. Vacuum system is characterised by material moving in an air stream of pressure less than ambient. It is used where flows do not exceed 5,000 kg/hr, the equivalent conveying length is less than 100 metres and several points are to be supplied from one source. It is ideal for conveying granules like plastic pellets, sugar, grains, catalysts, etc. and fine powders in chemical pharmaceutical and allied industries. In pressure system, the material is dropped into an air stream at higher than atmospheric pressure by a rotary air lock feeder. It is used for free-flowing materials needing capacity of over 5,000 kg/hr and conveying distance of more than 100 metres. Pressure system is supplied generally with twin lobe blowers capable of delivering pressure up to 1 kg/cm^2. For further information write to: Universal Air Systems Pvt. Ltd, 1 Jalaram Commercial Centre, Saki Vihar Road, Saki Naka, Bombay 400 072.



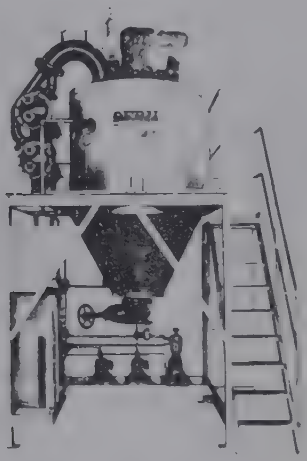
Chemical Products Finder, 5(3), 1986, 7

198 Vibratory conveyor and screen

Specific Equipment Industries manufacture vibratory conveyors and screens for all kinds of granular material for range of applications such as conveying, screening, shaking separating and cooling for use in quarry, mining, metal and chemical industry, foundry, food and glass industry, etc. Als offered are sand and coal dust mechanisation plants. For further information write to: Specific Equipment Industries, 14 A1 Karim Trade Centre, Ranigunj, Secunderabad, Andhra Prades 500 003.
Chemical Products Finder, 4(2), 1985, 31

199 Universal swing model hammer mill

Goodwyn Industries Corporation (India) manufacture a universal swing model hammer mill that provides maximum output Features of the hammer mill include: three different hors powers 1, 2, 3, 5 and 10; self aligning ball bearings ensur maximum bearing life; alloy steel cobalted hammers ensure maximum life and efficient pulverisation; and 3 speeds help t control output particle size by permutations and combinatio between speeds and screen sizes. It finds applicatins in masalas, pulses, groundnuts, chemicals, herbs, medicines, cattl feed, poultry feed etc. For further information wirte to Goodwyn Industries Corporation (India), Goodwyn House, 95-A Shankarshet Road, Pune, Maharashtra 411 037.
Chemical Products Finder, 4(3), 1985, 49



200 Low-cost dal milling machine

G.B. Pant University of Agriculture and Technology ha developed a unique low-cost dal (pulses) milling machine whic gives higher recovery of dal, minimising milling losses considerably.

The University Vice-Chancellor, Mr. Kripa Narain, told that the machine, specifically developed for milling bold grain pulses like pigeonpea (arhar), gram and soyabean, could enhance dal recovery up to 80 per cent with 97 per cent dehusking in a single pass of grains pre-treated with sodium bicarbonate.

The recovery of dal using traditional methods ranged between 68 to 71 per cent, he said.

The Vice-Chancellor hoped that with the large scale adoption of the machine, the milling losses of pigeonpea alone, which are estimated at Rs. 200 crores a year in the country, would be minimised to great extent. The milling process including pre-treatment of grains costs around Rs. 40,000 against Rs. 2.5 lakhs for that of conventional milling process.
Financial Express, 7 August 1986, 8

1 Cereal roller mill

A British-designed roller mill which brings the features of high torque drive (HTD) systems to the cereal milling industry is claimed to solve many of the problems posed by chain and gear drive. The twin power HTD differential found in the Type XK roller mill transmits the drive to the feedrolls which are interconnected by a toothed belt drive, replacing the usual gear-train. Very little tension is required, thereby reducing bearing loads. Noise is also reduced and there is no need for lubrication or special maintenance. The main rolls are engaged by heavy duty pneumatic cylinders activating simple compound lever systems, using the standard industrial air supply. Roll grind is adjusted and set by a finely graduated system that gives accurate control of the gap between the rolls. A secondary stop ensures that the roll surfaces never touch and accuracy is achieved by adjustment of the gap not the pressure. For further information write to: Henry Simon Ltd., P.O. Box 31, Stockport, Cheshire SK3 ORT, U.K.
Chemical Products Finder, 4(3), 1985, 35

02 Pin mill

Precision Products, Vatva, Ahmedabad, manufacture the Bombay Pin Mill which is designed to deal efficiently with a wide range of materials to grind them to any predetermined fineness from coarse granulation to fine powder upto 150 mesh. The grinding operation is effected through beating, shearing, crushing and auto-collision of material. Feeding is automatic by a feed hopper provided with oscillating sifter and the feeding is controlled to any desired rate. Large pieces of material are fed directly in the centre of the rotor, and are conveyed to the periphery of the rotor through a series of beater plates, thus gradually reducing them to the desired fineness. Sieves of required mesh are placed round the rotor and allow the pulverised materials to be ejected into the collection chamber. The pin mill is suitable for chemicals, foodgrains, spices, tobacco, herbs, vegetable products, etc. It is available in five different models. For further information write to: Jayems Engineering Co. Pvt. Ltd., Great Western Bldg., 1st Floor, 130/132, Bombay Samachar Marg, Bombay 400 023.

Chemical Products Finder, 4(3), 1985, 43

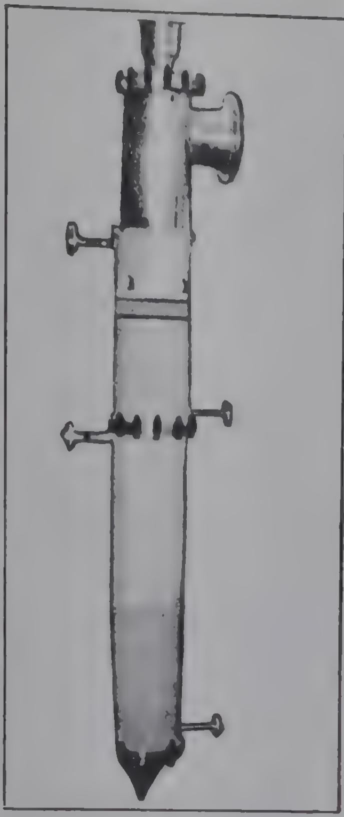
203 Rotary vibrators

Shakti Engineers manufacture the Shree Shakti rotary vibrator which handles dry powder, crystals, minerals, etc. The vibrator finds applications in pharmaceuticals and food products. It helps to empty, ventilate dose, remove dust, dehydrate, convey, loosen, mix, clean, screen, compact, feed, the material used in these industries. The vibrator is robust in construction. The ball bearings used are very heavy duty and totally enclosed construction keeps the dust and dirt away. The centrifugal force is adjustable from zero to maximum. The amplitude of vibration is 4 to 5 mm, but can be enhanced by judicious use of springs. Linear as well as circular vibrations are possible. Foot mounting, flange mounting type vibrators are available giving a wide choice of centrifugal force, frequency of vibration, etc. Special enclosures (IP55), special mountings and insulation could also be provided. The vibrator is manufactured from 50 to 10,000 Watts with vibrating frequencies of 3,000, 1,500, 1,000 and 750 depending on the RPM. For further information write to: Shakti Engineers, 8-F, New Empire Industrial Estate (A), Kondivita Road, Andheri (East), Bombay 400 059.

Chemical Products Finder, 4(3), 1985, 44

204 Agitated thin film evaporator

Ultimate Technics have developed the fixed clearance type agitated thin film evaporator (ATFE) for applications such as processing of highly viscous, temperature sensitive or fouling products. The contact time in the heated zone of ATFE is 5 to 20 seconds. The unit can handle product viscosities of up to 10,000 centipoise. The intense agitation of a very thin product film suppresses fouling. Normally processing is accomplished in one pass and without any recirculation. The high speed rigid rotor with a fixed and a very small clearance from the heated surface of ATFE ensures reliable thin film formation irrespective of product viscosity, it is said. As there are no moving parts on the rotor, there is no jamming of blades or blade wear and contamination of the product. The self-cleaning unit is robust and suitable for continuous operation. Specific applications are concentration of fruit juices and pulps, enzymes, drugs, herbal extracts, tea and coffee extracts, protein hydrolysates, and fermentation solutions; dehydration of lecithin and glyoxols; and distillation of heavy organics such as fatty acids. For further information write to: Ultimate Technics, B 2/3, Suman Nagar, Sion-Trombay Road, Chembur, Bombay 400 071.



Chemical Products Finder, 5(2), 1986, 36

05 Microwave drying systems

The Model MDS-81 microwave drying system is suitable for moisture/solids determination or use as preparative step for other analytical procedures. A feature is its ability to dry sample analytically (less than 0.1 mg water) in minutes which is not possible using conventional microwave ovens because of problems of reflected energy. Water molecules absorb the microwave radiation causing an increase in molecular motion (rotational). Due to this absorption of energy, the water is selectively heated and removed through vaporisation. The increased rate of drying is a result of uniform heating of water throughout the sample. In conventional drying ovens, the heating is non-uniform and therefore much slower. Using microwave technique, drying is reduced from hours to minutes. Because of large oven cavity size, multiple samples can be easily dried at the same time. An optional rotating turntable is available to accommodate multiple sample testing. Also using thermopad technique which transfers thermal energy into a sample while it is being dried by microwave energy, MDS-81 allows drying for free and "bound" water. Microwave Power is programmable from 0 to 100% (600 Watts) and drying time from 0 to 100 hours in steps of hours, minutes and seconds in three programmable stages for both power and time independently. Readout is provided by 20-digit alphanumeric display. Programming key board with 15 keys to enter data & run samples is provided. Patented electronic system controls reflected Microwave power. MDS-81 provides constant repeatable drying conditions and exhaust system for rapid water vapour with-

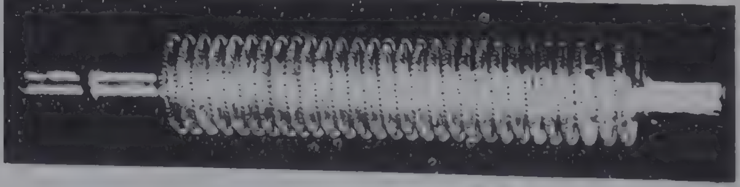
drawal. Typical applications for solids, liquids and slurries are in chemicals for solutions, powders, emulsions, dispersions; pharmaceuticals; water based and non-aqueous paints and coatings; food and dairy; tobacco; textiles; pulp and paper; latex; fertilisers; detergents; etc. For further information write to: Neotronics International, P.O. Box No. 7754, Bombay 400 080.
Chemical Products Finder, 5(3), 1986, 74

206 Infrared drying/curing system

Intermetal Engineers have developed infrared drying, curing system which has multifold advantages. A novel feature of this system is infrared ceramic heating elements are used as a heating source against traditional infrared lamps. The advantages of infrared drying system are said to be: up to 30% energy saving; up to 30% higher productivity; accurate remote control and quick response; and a compact system. This system is ideal for confectionary, pharmaceuticals and electronics, tea and leather. The installations include a 15 metre long curing oven at TISCO, Jamshedpur. For further information write to: Intermetal Engineers, B Harish Kunj, 46 Tagore Road, Santacruz (W), Bombay 400 054.
Industrial Products Finder, 14(10), 1986, 17

207 Finned tube

Spirofins Industries manufacture spiral finned tubes of looped and crimped type. The use of spiral fin tubes not only provides uniform heat but also increases the heat output many times depending upon the height and number of fins, per unit length employed, it is said. The tubes are manufactured in steel, brass, aluminium and copper with fin materials of similar or any other combination. Also fabricated are steam heaters, radiators, air heaters, oil coolers, paddy driers, tobacco driers, as well as shell and tube heat exchangers. For further information write to: Spirofins Industries, 97, Kutchery Road, Mylapore, Madras 600 004.



Chemical Products Finder, 4(3), 1985, 6

Noodle making machinery

Machines for the production of all kinds of noodles, spaghetti, macaroni, etc, are manufactured by Firma Emil Lihotzky of the Federal Republic of Germany. Fully automatic complete noodle production plants capable of outputs of 6/20/200/400 kg/h are available besides a number of individual machines which include dryers, dosing devices, presses, noodle-rolling plants, conveying chutes and belts, etc. For further information write to: Ortheiler International, D-24 Commerce Centre, Tardeo Road, Bombay 400 034.
Industrial Products Finder, 14(10), 1986, 190

Automatic machine to sort out bad potatoes

Potato processing plants in seven countries are now automatically removing damaged and diseased potatoes from their lines, using a Loctronic Autoselector, according to the NZ agent, C & C Automation.

The restrictions of human stretch and vision have been breached by this machine which is guaranteed 90 per cent accurate by the designers and can handle a peeled sample of over 50 mm size at 12-1/2 tonnes an hour.

All sides of the tubers are viewed as they revolve and advance beneath the gaze of the television camera. Very-high-speed-logic interprets the picture and when a blemish is discovered a mark can be seen on the in-built monitor, alongside the image of the offending potato. This makes it very easy to adjust the system to everyday commercial consideration.

At the end of the presentation table, a line-scan camera sizes and counts all potatoes, instructing the right number of fingers to rise up and eject any that the system has marked.

The program can be instructed to size out, or using an Axeman attachment cut up, large potatoes. The system can be set to ensure that larger potatoes need larger defects before an ejection decision is made. Also with the use of a second finger bank, the "horrible" can be separated from the bad. For further information write to: C & C Automation CPO Box 4305, Auckland 1.
Food Technology in New Zealand, November 1985, 47

Cable strap

The Caledian cable strap provides an instant and permanent method of fixing and supporting cables, piping and building and construction brackets. The cable strap is strong and is resistant to heat and seawater corrosion. It can be easily cut to length and formed to the required shape by hand. The fixing holes are punched out using a simple tool and is a standard size for metal storage racking, cable trays and perforated

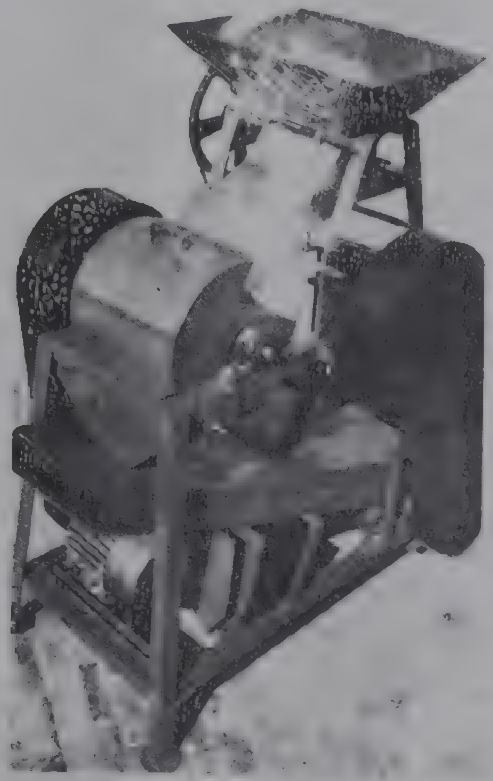
metal structures. Caledian cable strap is supplied in 100 metres length in black or grey colour. It finds applications in petrochemical plants, airports, docks, mines, transmitting antennae, factories, building construction sites, hospitals, food processing plants, dairy farm milk units, automotive and transport, agriculture, irrigation, domestic use, etc. For further information write to: Suresh Electrics and Electronics, 3B, Camac Street, P.O. Box No. 9141, Calcutta 700 016.
Chemical Products Finder, 4(4), 1985, 3

211 Solvent reclaiming system

OFRU-Recycling GmbH & Co. KG of Fed. Republic of Germany offer the solvent reclaiming systems SC 1000 and SC 1500 with processing capacities of 180 and 350 l/h, respectively. All parts of the distillation unit are mounted on a frame with a platform ready for connection to utilities: evaporator with agitator and scrapers, condenser, pumps for dirty solvent and distillate, vacuum pump, in between tank for distillate and all electrical steering instruments, explosion-proof. The process is completely automatic. The thermo-oil unit or an appropriate steam generator heats the cone up to 300 C. On starting the unit the magnetic valve opens and the pump feeds dirty solvent into the evaporator. The quantity is determined via an electrical level control with no moving parts. Due to this control the solvent level is kept more or less constant. The agitator accelerates the evaporation. The adjustable and exchangeable scrapers connected to the arms of the agitator keep the heat transfer surface clean and prevent formation of heat consuming precipitations. The solvent vapours pass through a tubular condenser, which is provided with a cooling water control, and after condensation the clean solvent is collected via vacuum pump in the distillate tank. The vacuum system permits a careful distillation even of high boiling solvents and assures that ignition points are not surpassed. The level control starts the pump which brings the distillate to factory tanks. The distillation process can be observed through a window while a lamp illuminates the inside. When the residue in the evaporator has reached a certain viscosity the feeding of the dirty solvent stopped. The sump distillation begins. After a certain time the system stops. Now the slide valve is opened and the residue drained. The content of solvent in the residue depends on the kind of solvent and material. On the average it is about 5%. The system can be imported against Actual User's Import Licence. For further information contact: East West Exports (India), 310A, Commerce House, Nagindas Master Road, Fort, Bombay 400 023.
Chemical Products Finder, 4(3), 1985, 5

12 Arecanut dehusker

A new type of Arecanut Dehusker, developed as a result of a study conducted at IARI, New Delhi, is an improved version of the first prototype developed at TNAU in 1980. This machine, working on the principle of cylinder concave mechanism can be used for dehusking dried arecanut fruits. Powered by a 2 HP. electric motor it is provided with an automatic feeding mechanism to ensure positive and uniform feeding. The throughput-capacity of the machine is 120 kg of fruits/hour. The dehusking efficiency and the separation efficiency are 95% and 97% respectively, while the breakage of kernels is about 5% only. The cost of operation works out to Rs. 5.67/quintal as against Rs.38/quintal in the case of conventional method of manual dehusking, resulting in a saving of about 86% of cost and 95% of time. The cost of the unit works out to Rs. 6,000/-.



Tamil Nadu Agricultural University Newsletter, 15(12), 1986, 2

213 Bread slicing machine

A new bread slicing machine with a unique slicing action has been introduced in the market. The new slicing action is achieved with blades which have been set alternatively at angles of 60° and 120°. As such the bread suffers little deformation, less friction when cutting into the bread and the blades are used over a great length so they do not quickly become blunt. Additionally, the high speed per blade of 45 to 50 metres/per minutes is achieveable. The machine also has two separate crumb drawers for trapping usable crumbs separately from the crumbs which pass through the machine section, with a

standard slice thickness of 11 mm. However, the machine can also be modified for slice thickness of 9, 10, 12 and 12-1/2 mm. For further information write to: Daub-Verhoeven B.V., Postbus 51, 5050 AB Goirle, The Netherlands.
Chemical Products Finder, 4(4), 1985, 15

214 New separator for fermentation industry

A new separator, designed specifically to meet high demands for hygiene in fermentation processes, has been introduced by Alfa-Laval Separation AB.

Designated the Feux 510, the new model operates in the medium throughput capacity range (up to 50 cu m/h of feed).

The Feux 510 is a disc-type nozzle centrifuge with self-regulating vortex type nozzles. Variations in feed flow rate or feed solids concentration are efficiently compensated for, and concentration of the discharged solids phase is also kept constant.

The hygienic design includes machined-out solid pockets in the bowl wall, to avoid the undesirable build-up of solids, and high-grade stainless steel is used for all liquid-wetted parts.

The separator's design features are said to make it especially suitable for use in highly automated process lines. These features include pressurised discharge of both the concentrate and the effluent and a novel system for automatic ejection of washed-out solids during the cleaning cycle.

Alfa-Laval's range of centrifuges are handling such fermentation industry processes as baker's yeast, amino acids and single-cell protein separation. For further information write to: Dairy Division, Alfa-Laval (NZ) Ltd, Box 10-241, Hamilton.
Food Technology in New Zealand, November 1985, 47

215 Low shear extrusion system

This may be used for producing snack foods, breakfast cereals, convenience foods and related products. The systems provide integrated processing from raw material blending through extrusion cooking, extrusion forming, and drying. They also incorporate improved high temperature short-time (HTST) cooking techniques and thin-film heat transfer. The low-shear extrusion systems featue improved operating flexibility over a wide range of raw materials and moisture levels. For more information, write to MAPA, 1913 Olde Homestead Lane, Lancaster, PA 17601.
Food Technology, May 1986, 254

16 Metals for repairing damaged machinery

Belzona Molecular Ltd., U.K., have developed metals viz. E.Metal, Super Metal and Ceramic Metal for rebuilding and repairing all types of worn or damaged machinery and equipment. The metals reportedly exhibit phenomenal bonding to the original substrate--in effect, they form a molecular weld without heat. Supplied in the form of "Do it Yourself" kit, the metals find application in bearing housings, shafts, hydraulic rams, engine blocks and crankcases, casings and sumps, stripped threads, sloppy keyways, bimetallic corrosion, pipes and pipe bends, pump bodies and impellers, valve bodies, condensers and heat exchangers, waterboxes, propellers and kort nozzles, rudders and pintel housings, radiators, leaking tanks, walkways and steps, work areas and tank tops, drive rollers and brake test rollers. For further information wirte to: Industrial & Marine Maintenance Corporation, 1117, Rahaja Chambers, 213, Nariman Point, Bombay 400 021.

Chemical Products Finder, 5(2), 1986, 73

PACKAGING

217 Aseptic food packaging systems

Larsen & Toubro have introduced aseptic long life food packaging systems for all types of milk, yoghurt, soya milk, cream, shrikhand, ice cream mix, cheese, juices and all varieties of drinks, offered by BEMAC srl, Italy. Sterilisation of the packaging materials and machine parts is carried out by hydrogen peroxide. In addition, automatic process controls ensure aseptic packaging of the food product in the container. The thermoformed containers, which are heat sealable, are made of traditional plastic as well as coextruded and laminated materials all of which are indigenously available. BEMAC's machinery--designated Asepak--for making aseptic packaging has capabilities ranging from 6,000 to 24,000 cup-size (150-250 cc) packs per hour. For packaging food items which do not need sterilisation of their containers (e.g. jams, soya sauce, hazel nut cream, chocolate cream spreads, mayonnaise, gelatine, fats, peanuts, soft cheese, oils, margarine, butter and some juices.) BEMAC supplies simpler systems designated Minpak and Laborpack. For further information write to: Larsen & Toubro Limited, Food Processing Division, P.O. Box No. 278, Bombay 400 038.

Chemical Products Finder, 5(3), 1986, 14

ANALYSIS

218 Accurate enzyme analysis

This may be achieved across a range of biochemicals with the Provesta Multipurpose Enzyme Sensor. The instrument's high specificity of enzymes results in a rapid analysis when a probe containing an immobilized enzyme is placed in a container with

buffer and sample to be analyzed. Other analyses can be conducted by changing the enzyme in the probe. Most samples require little or no pretreatment or clarification. For more information write to Provesta Corporation, 14 C4 Phillips Building, Bartlesville, OK 74004.
Food Technology, November 1985, 148

219 Cold sterilization

Cold sterilization or clarification using membrane filtration may be accomplished with Nalgene Tissue Culture Sterilization Filter Units with cellulose acetate membranes. The tissue culture grade cellulose acetate membrane features low protein binding and good flow rates with proteinaceous solutions. It may be used for filtering solutions with a high protein content, such as tissue culture media or serum, as well as solutions with a low protein content where a high percentage of protein must be recovered. The filters which are available in 0.2 or 0.45 μm pore sizes, are low in extractables and Triton-free. The filterware comes complete with a tubing adapter for attaching the units to a vacuum source. For a copy of the brochure, contact Nalge Co., Box 365, Rochester, NY 14602.
Food Technology, November 1985, 148

220 Solids/liquids determination

Percent solids or liquids may be determined using the Accu Dry system. The system utilizes dark infrared drying to rapidly and evenly dry 8 to 12 samples simultaneously. The system consists of a drying unit and a balance which are separate to eliminate errors caused by temperature rise. The infrared radiation is produced by filaments enclosed in ceramic which provide an even field of rays. The cooling chamber contains a high-velocity fan to cool the samples before weighing. A temperature regulator provides accurate control of oven temperature within 1° of setting. For further information write to: Artek Systems Corp., 170 Finn Cpurt, Farmingdale, NY 11735.
Food Technology, May 1986, 260

221 Sulphur dioxide analyser

Netel Chromatographs have introduced a pollution monitoring instrument, sulphur dioxide analyser. The instrument is available in Model No. NPM-SI (Source Monitor) and Model No. NPM-S11 (Ambient Monitor), developed on the principle of fluorescence. Features include: continuous monitoring of SO_2, excellent linearity in all ranges, compensated lamp intensity variation using low analogue divides technology, long term zero and span stability, extended lamp life insensitive to interferences and charges in sample flow, and ultra high sensitivity. No consumable or wet chemicals are required. Measuring ranges are: Ambient: 0-0.5

and 0-5.0 PPM, and Source: 0-50, 0-100 and 0-500 PPM. For further information wirte to Netel Chromtographs, S.V. Road, Manpada, Thane, Maharashtra 400 607.
Chemical Products Finder, 4(4), 1985, 19

COMMERCIAL INTELLIGENCE

PRODUCTION (RAW MATERIALS)

22 All-India crop estimate, 1984-85

Crop	Area (Thousand hectares)	Production (Thousand tonnes)
Rice	41,159.1	58,636.200
Jowar	15,689.2	11,251.8
Bajra	10,643.7	6,160.8
Maize	5,799.3	8,355.9
Ragi	2,387.5	2,532.2
Small Millets	3,393.0	1,319.4
Wheat	23,613.8	44,229.3
Barley	1,252.0	1,543.7
Gram	6,857.0	4,547.1
Tur	3,213.0	2,666.0
Other Kharif Pulses	7,417.9	2,258.2
Other Rabi Pulses	5,189.3	2,723.7
Groundnut (Nuts in shell)	7,754.2	6,744.1
Castorseed	673.6	468.8
Sesamum	2,156.1	524.8
Rapeseed & Mustard	4,403.2	3,030.2
Linseed	1,546.1	388.4
Nigerseed	571.8	146.9
Safflower	870.1	497.3
Sunflower	689.1	364.6
Soyabean	1,192.1	933.5
Coconut	1,192.8	6,887.2
Potato	853.3	12,642.0
Pepper (Black)	106.56	20.64
Chillies (Dry)	780.6	605.4
Ginger (Dry)	49.76	122.86
Arecanut	187.0	192.3
Turmeric	99.2	243.8
Banana	282.8	4,626.2
Guarseed	2,528.1	700.2
Tapioca	308.3	5,568.6
Cardamom	114.8	8.7
Coriander	398.1	121.4
Sweet Potato	202.4	1,522.7
Garlic	66.9	292.5
Onion	272.1	2,870.0

Agricultural Situation in India, February 1986, 1069

PRODUCTION (INDUSTRIAL)

223 Sugar production

According to the Indian Sugar Mills Association sugar production during the first fortnight of July, 1986 (i.e. 1.7.86 to 15.7.86) was about 29,000 tonnes as against 18,000 tonnes during the corresponding period last year.

The total closing stock of sugar as on 15th July 1986 was 34,90,000 tonnes (including 1,17,000 tonnes of imported sugar) as against 28,01,000 tonnes (including 1,59,000 tonnes of imported sugar) on the same date last season.
Indian Sugar Mills Association Press Release, 22 August 1986

EXPORT

224 Export of tea from India

Year	quantity (Million Kg.)	Value (Rs.Crores)	Unit Value (Rs./Kg.)
1981	241.2	434.3	18.00
1982	189.9	355.6	18.73
1983	208.5	516.8	24.79
1984	217.0	744.9	34.33
1985	222.4	711.9	32.01

The Economic Times, 10 July 1986, 11

225 Export of turmeric

Exports during 1984-85 were to the tune of 12923 tonnes valued at Rs. 171.6 million against 10,892 tonnes valued at Rs. 110.6 million during 1983-84 registering increase both in terms of quantity and earnings. The target fixed for 1984-85 was Rs. 110 million. The attainment was 171.6 million FOB price realisation of turmeric showed increase to Rs. 13.28 per kg during 1984-85 from Rs. 10.14 per kg. during 1983-84. In respect of turmeric also Middle East was the major importing zone followed by East Asia Zone and USA.
Economic and Commercial News, 16(27), 1986, 7

26 Export of spices

Item	1984-85 (tonnes)
Curry powder	3,122
Fennel seed	3,711
Funugreek seed	5,544
Spice Oils and Oleoresins	311

Economic and Commercial News, 16(27), 1986, 6

227 Pepper exports touch new high

Earnings from exports of pepper from India achieved a new peak during the year 1985-86 with the value of pepper exports exceeding Rs. 1250 million, against the previous year's earnings of Rs. 605 million, marking up more than two-fold increase, according to the Spices Export Promotion Council sources.

Economic and Commercial News, 16(32), 1986, 2

228 HPS groundnut exports

India has virtually lost the export market in HPS groundnut to China, which has emerged as the largest supplier in the world. Only the sustained interest by the Soviet Union in Indian HPS groundnut, regardless of prices, has enabled India to retain some foothold on the world market. But for the support from this country, this commodity would have been elbowed out from the world market long ago.

Considering the performance so far, the exports of HPS groundnut are expected to decline further in 1984-85. The exports amounted to 20,000 tonnes by the end of January, 1985 and they would at best total 25,000 tonnes by the end of the current financial year, as against 40,000 tonnes. (Rs. 34 crores) last year. Out of 20,000 tonnes, the Soviet Union alone is said to have taken about 18,000 tonnes.

At present Indian HPS groundnut has been priced out by nearly $ 100 per tonne. Indian exporters are not in a position to sell at less than $ 750 per tonne, against the world price of $ 650 per tonne.

The exports of HPS groundnut can be made viable only if the yield is raised substantially from the present level of 850 kgs. per hectare. In the meantime short-term measures like providing cash compensatory support and linking the exports of HPS groundnut to the imports of either oilseeds or edible oils can prop up the export trade for some time.
The Oils and Oilseeds Journal, 37(7-9), 1985, 42

IMPORT

229 Import cess bill passed

Parliament gave its approval to the Bill seeking to provide for the levy and collection of a cess on all payment, made for import of technology.

The legislation - The Research and Development Cess Bill, 1986 - which the Rajya Sabha passed after a brief discussion specified that the cess would be used for encouraging the commercial application of indigenous technology and for adopting imported technology to wider domestic application.
Deccan Herald, 8 August 1986, 14

TRADE INFORMATION

230 Iodised salt units to get subsidy

Government has decided to give subsidy to iodised salt manufacturers and supply potassium iodate free of charge with effect from August, 1, 1986.

According to an official press release, 422 entrepreneurs have been given permission to set up iodisation plants upto the end of June this year. Of them 91 units with an installed capacity of 17.44 lakh tonnes have gone into production. The plants are concentrated mostly in Gujarat, Rajasthan and Tamil Nadu.

Government has decided to iodise the entire quantity of edible salt by 1992. It would involve increase of current iodised salt production from three lakh tonnes to 52 lakh tonnes per annum by 1992.

According to the release, about 14 crore people are already exposed to severe iodine deficiency disorders and it might touch the 20 crore mark by the end of the century.
Deccan Herald, 11 August 1986, 15

231 American food consumption increasing

Per capita annual food consumption in the U.S. has risen 35 pounds since 1980, from an average 1,396 a year in 1980-1983 to an expected 1,431 pounds this year, according to the Food Institute. The Food Institute attributes this rise to abundant food supplies, modest price increases for many items, rising incomes, and the changing age composition of the population.

Generally, people between the ages of 15 and 64 eat more than the young or the elderly. With the maturing of the post-World War II baby boomers, a higher percentage of the population falls into this age group. This percentage is expected to peak at 68% by the year 2010.

More good news is that the number of people between the ages of 35 to 44, who spend one-third more for food at home and away than the average population, is also growing. This group now makes up 12% of the population, and is expected to rise to 16% by the year 2000.
Food Production/Management, October 1985, 19

232 Recognition of Indian Organisations by the Ministry of Health and Welfare, Government of Japan.

The Japanese Embassy at New Delhi informs that the following eight Indian shipment inspection agencies have been recognised as official organisations by the Ministry of Health and Welfare, Government of Japan and the inspection reports of these agencies can be accepted.

1) Export Inspection Agency, Bombay
2) Export Inspection Agency, Calcutta
3) Export Inspection Agency, Cochin
4) Export Inspection Agency, Delhi
5) Export Inspection Agency, Madras
6) Indian Standards Institution
7) Directorate of Fruits and Vegetables Preservation
8) Agricultural Marketing Adviser (AMA)

Spices Newsletter, 20(7), 1986, 3

233 Roller flour mills licensing liberalised

The Government has liberalised the existing policy for setting up new roller flour mills.

A limited number of new mills can be set up in different States and Union Territories, depending upon the capacity already existing, the present level of utilization and proposed location in districts which do not have mills, proximity of consumption centres, the likely demand in future and other related factors.

Preference will be given to the following categories of applicants:

- -- Public Sector
- -- Cooperative
- -- Ex-servicemen

Applications from private entrepreneurs will be considered only in the absence of the above categories of applicants.

Those who intend setting up roller flour milling plants of capacity of not more than 30 MT per day, may apply through the State Government for permission. One copy of their application should be directly sent to Deputy Secretary and Licensing Authority, Department of Food, Ministry of Food and Civil Supplies, Krishi Bhawan, New Delhi.

It may also be noted by the applicants proposing to employ 50 or more workers that they will also have to apply for grant of an industrial license, as per the procedure laid down under the Industries (Development and Regulations) Act.
RIICO Newsletter, May 1986, 7

234 Popularising soybean oil

The Centre has decided to popularise refined soybean oil for direct human consumption and to blend refined soybean oil with groundnut oil so as to make it more acceptable to consumers.

The decision was taken at a meeting of the Interministeral coordination committee on soybean processing under the Chairmanship of Mr.K.C.Pandeya, Secretary to the Department of Civil Supplies.

The meeting also decided to take speedy action for removing the constraints in the marketing of soybean and other edible flours, which were rich sources of protein.

A survey of oil processing units would be made to ensure production of soyabean oil and soya meal of the right quality through modernisation and technological upgradation. The possibility of setting up a National Institute for Research and Development in Vegetable Oils is also being considered.
The Oils and Oilseeds Journal, 37(7-9), 1985, 35

235 Vanaspati industry

The recent option given to the vanaspati industry to buy more oils from the open market has not yielded desired results. Neither has the demand for the oils used by the vanaspati industry increased nor the prices of such oils shown any signs of recovery. Since this decision, the price of cottonseed oil has declined from Rs. 11,674 to Rs. 11,336 per tonne.

The vanaspati industry is supplied 60 per cent of its edible oil requirements at a concessional rate of Rs. 9,500 and 25 per cent at the commercial rate of Rs. 13,000 per tonne. Recently, the industry was given an option of buying 10 per cent out of commercial quota of 25 per cent from the open market. The objective was to give support to the falling prices of some oils, besides helping the industry to meet a part of its requirements at lower prices. The industry was happy with the decision as it gave the option of buying cheaper oils available in the open market. The industry can now buy more cottonseed oil which is cheaper than the imported edible oils supplied to it, at a commercial price of Rs. 13,000 per tonne.

While the market is facing the heavy pressure of cottonseed oil supplies, the vanaspati industry has not shown any signs of expanding its inventories. The brisk supplies of cottonseed oils are explained by bumper cotton crop being harvested this season. On the other hand, the demand for vanaspati continues to be sluggish in part due to heavy imports of edible oils. Huge quantities of oil being pumped through the public distribution system and the easy availability of cheaper oils like cottonseed oil, rapeseed oil and soybean oil has affected the demand for vanaspati.
The Oils and Oilseeds Journal, 37(7-9), 1985, 54

FOOD REGULATION, QUALITY CONTROL AND HYGIENE

FOOD REGULATION

36 Prevention of Food Adulteration (Third Amendment) Rules, 1986

G.S.R.852(E) -- Whereas certain draft rules further to amend the Prevention of Food Adulteration Rules, 1955, were published as required by sub-section (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954), with the notification of the Government of India in the Ministry of Health and Family Welfare (Department of Health) No.G.S.R. 541(E) dated the 2nd July, 1985, in the Gazettee of India, Extraordinary, Part II, Section 3, Sub-section (i), dated the 2nd July, 1985 at pages 1 to 5, inviting objections and suggestions from all persons likely to be affected thereby before the expiry of ninety days from the date on which copies of the Gazette of India in which the said notification was published, were made available to the public;

And whereas the copies of the said Gazette were made available to the public on the 2nd July, 1985;

And whereas the objections and suggestions received from the public on the said draft rules have been considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sub-section (1) of section 23 of the said Act, the Central Government, after consultation with the Central Committee for Food Standards, hereby makes the following rules further to amend the Prevention of Food Adulteration Rules, 1955 namely:--

RULES

1. (1) These rules may be called the Prevention of Food Adulteration (Third Amendment) Rules, 1986.

(2) They shall come into force on the date of their publication in the Official Gazette, except subrule (1) of rule 2 which shall come into force immediately on the expiry of six months from the date of such publication.

2. In the Prevention of Food Adulteration Rules, 1955,--

(1) after sub-rule (ZZ) of rule 42, the following sub-rule shall be inserted, namely:-

"(ZZZ) Every package of chewing' tobacco shall bear the following label, namely:-

"Chewing of tobacco is injurious to health";

(2) in rule 55, in the table,--

(a) for item 24 and the entries relating thereto, the following item and entries shall be substituted, namely:-

"24; Tomato puree and paste-Benzoic acid 750".

(b) after item 34 and the entries relating thereto, the following item and entries shall be inserted, namely:-

"35. Preserved chapaties Sorbic acid 150"

(3) in Appendix 'B',-

(a) after item A, 16,13, the following item shall be inserted, namely:-

"A.16.14--Tomato puree or Tomato Paste or any other expression conveying the meaning that the product so designated is a form of tomato puree or tomato paste, shall be a preparation of sound and ripe tomatoes with or without (a) salt, spices and condiments;

(b) citric acid, malic acid, tartaric acid, lactic acid and L-ascorbic acid; and

(c) permitted preservatives.

The product shall be free from skin and seeds. It shall be free from added colouring matter. The product shall show no sign of fermentation action when incubated at 37 C for seven days.

Tomato Puree shall contain not less than 9 per cent total soluble solids, by weight whereas Tomato Paste shall contain not less than 25 per cent total soluble solids by weight.

(b) in item A. 18. 14 in the list of "improvers" after the words, figures and brackets "Calcium stearoyl-2-lactylate (singly or in combination)" and the entry thereagainst, the following shall be inserted namely:-

"L-Cysteine mono-hydrochloride-Not more than 9 ppm by weight".
[No.15014/7/84-PH(F&W)PFA)]

Sd/-
S.V.Subramanyam, Jt. Secy.

The Gazette of India, Part II-Section 3-Sub-section(i), No: 290, 13 June 1986.

237 Prevention of Food Adulteration (Fourth Amendment) Rules 1986.

G.S.R. 851(E):- Whereas certain draft rules further to amend the Prevention of Food Adulteration Rules, 1955, were published as required by sub-section (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954), with the notification of the Government of India in the Ministry of Health and Family Welfare (Department of Health) No. 384(E), dated the 27th April, 1985, in the Gazette of India, Extraordinary, Part-II, Section 3, Sub-section (i), dated the 27th April, 1985, at pages 1 to 5, inviting objections and suggestions from all persons likely to be affected thereby before the expiry of ninety days from the date on which copies of the Gazette of India in which the said notification was published, were made available to the public;

And whereas the copies of the said Gazette were made available to the public on the 27th April, 1985;

And whereas the objections and suggestions received from the public on the said draft rules have been considered by the Central Government;

Now therefore, in exercise of the powers conferred by sub-section (1) of section 23 of the said Act, the Central Government, after consultation with Central Committee for Food Standards, hereby makes the following rules further to amend the Prevention of Food Adulteration Rules, 1955, namely:-

RULES

1.(1) These rules may be called the Prevention of Food Adulteration (Fourth Amendment) Rules, 1986.

(2) They shall come into force immediately on the expiry of one year from the date of their publication in the Official Gazette.

2. In the Prevention of Food Adulteration Rules, 1955, in rule 65, in the Table, after serial number 20 and the entries relating thereto, the following shall be inserted, namely:-

Sl. No.	Name of insecticide	Food	Tolerance limit mg/kg(ppm)
1	2	3	4
"21	CHLORFENVINPHOS (Residues to be measured as alpha and beta isomers of chlorfenvinphos)	Foodgrains	0.025
		Milled Foodgrains	0.006
		Milk and Milk products	0.2 (fat basis)
		Meat and Poultry	0.2 (carcass fat)
		Vegetables	0.05
		Groundnuts	0.05(Shellfree basis)
		Cotton seed	0.05
22.	CHLOROBENZILATE	Fruits	1.0
		Dry Fruits, Almonds Walnuts	0.2 (Shellfree basis)
23.	CHLORPYRIFOS	Foodgrains	0.05
		Milled foodgrains	0.01
		Fruits	0.5
		Potatoes & Onions	0.01
		Cotton seed	0.05
		Cottonseed oil (crude)	0.025
		Cauli Flower and Cabbage	0.01
		Other Vegetables	0.2
		Meat & Poultry	0.1 (carcass fat)
		Milk & Milk products	0.01 (fat basis)
		Cotton seed	0.05
		Cottonseed oil (crude)	0.025
24.	2,4-D	Foodgrains	0.01
		Milled foodgrains	0.003
		Potatoes	0.2
		*Milk & Milk products	0.05
		*Meat and Poultry	0.05
		Eggs	0.05 (shellfree basis)
		Fruits	2.0
25.	ETHION (Residues to be determined as ethion and its oxygen analogue and expressed as ethion).	Tea (dry manufacctured)	5.0
		Cucumber & Squash	0.5
		Other vegetables	1.0
		Cotton seed	0.5

1	2	3	4
		Milk & Milk products	0.5 (fat basis)
		*Meat and Poultry	0.2 (carcass fat basis)
		Eggs	0.2 (shellfree basis)
		Foodgrains	0.025
		Milled foodgrains	0.006
		Peaches	1.0
		Other fruits	2.0
		Dry fruits	0.1 (shellfree basis)
26.	FORMOTHION (Determined as dimethoate and its oxygen analogue and expressed as dimethoate except in case of citrus fruits where it is to be determined as fromathion).	Citrus fruits	0.2
		Other fruits	1.0
		Vegetables	2.0
		Tomatoes	1.0
27.	MONOCROTOPHOS	Foodgrains	0.025
		Milled foodgrains	0.006
		Citrus fruits	0.2
		Other fruits	1.0
		Carrot, Turnip, Potatoes and Sugar beet	0.05
		Onion and Peas	0.1
		Other vegetables	0.2
		Cotton seed	0.1
		Cottonseed oil (raw)	0.05
		*Meat and Poultry	0.02
		*Milk and Milk products	0.02
		Egg	0.2 (Shellfree basis)
		Coffee (raw beans)	0.1
28.	PARAQUAT Dichloride (Determined as paraquat cations)	Foodgrains	0.1
		Milled foodgrains	0.025
		Potatoes	0.2
		Other vegetables	0.05
		Cotton seed	0.2
		Cottonseed oil (edible refined)	0.05
		*Milk (whole)	0.01
		Fruits	0.05
29.	PHOSALONE	Pears	2.0
		Citrus fruits	1.0
		Other fruits	5.0

1	2	3	4
		Potatoes	0.1
		Other vegetables	1.0
		Rapeseed Mustard oil (Crude)	0.05
30.	TRICHLORFON	Foodgrains	0.05
		Milled foodgrains	0.0125
		Sugar beet	0.05
		Fruits and vegetables	0.1
		Oil seeds	0.1
		Edible oil (refined)	0.05
		*Meat and Poultry	0.1
		*Milk (whole)	0.05
31.	THIOMETON (Residues determined as thiometon its sulfoxide and sulphone expressed as thiometon)	Foodgrains	0.025
		Milled foodgrains	0.006
		Fruits	0.5
		Potatoes, Carrots & Sugar beets	0.05
		Other vegetables	0.5

*Soluble in water and hence not necessary to mention on fat basis.

[No. P-15016/16/80-PH(F&N)PFA (vol-II)]
Sd/-
S.K. ALOK, Jt.Secy.

The Gazette of India, Part II-Section, 3-Sub-section (i), No: 289, 13 June 1986.

238 Prevention of Food Adulteration (Fifth Amendment) Rules 1986

G.S.R. 910 (E) -- Whereas certain draft rules further to amend the Prevention of Food Adulteration Rules, 1955 were published as required by sub-section (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954) with the notification of the Government of India in the Ministry of Health and Family Welfare (Department of Health) No. 544 (E), dated the 2nd July 1985, in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (i), dated the 2nd July 1985, at pages 1 to 5, inviting objections and suggestions from all persons likely to be affected thereby before the expiry of ninety days from the date on which copies of the Gazette of India in which the said notification was published were made available to the public;

And whereas the copies of the said Gazette were made available to the public on the 2nd July 1985.

And whereas the objections and suggestions received from the public on the said draft rules have been considered by the Central Government.

Now, therefore, in exercise of the powers confered by sub-section (1) of section 23 of the said Act, the Central Government, after consultation with the Central Committee for Food Standards, hereby makes the following rules further to amend the Prevention of Food Adulteration Rules, 1955, namely:-

RULES

1.(1) These rules may be called the Prevention of Food Adulteration (Fifth Amendment) Rules, 1986.
(2) They shall come into force on the date of their publication in the Official Gazette.
2. In the Prevention of Food Adulteration Rules, 1955 Appendix B,-

(1) in item A.17.11 in clause (c), for the figures and word "105 to 115", the figures and word "103 to 120" shall be substituted;

(2) in item A.17.13 for the figures and word "61.7 to 69.5" occurring against the entry "Butyro-referactometer reading at 40 C" the figures and word "58.5 to 68.0" shall be substituted.

(3) in item A.19 in clause (xi), for the words, figures and letters "and not less than 15 I.U. of synthetic Vitamin 'A' per gram at retail level", the following shall be substituted, namely:-

'and shall show a positive test for Vitamin 'A' when tested by Antimony Trichloride (Carr-Price) reagent (as per IS: 5886-1970)".

[No.P-15014/10/84-PH(F&N)PFA]
S.V.SUBRAMANIYAN, J. Secy.

The Gazette of India, Part II-Section-3-Sub-section (i), No:320, 27 June 1986

239 Irradiation of fresh fruits and vegetables permitted

A decision by the Food and Drug Administration (FDA) to allow low dose irradiation to preserve foods will benefit consumers in the U.S. and around the world by providing a safer, more plentiful food supply, according to the Coalition for Food Irradiation.

The ruling released December 12 and sent to the Office of Management and Budget for final approval specifically allows for low-dose irradiation, a process using forms of radiant or light energy, in doses of up to 100 kilorads to disinfest and preserve fresh fruits and vegetables.

The ruling will require label with the international symbol for irradiated food and the term "picowaved" for both packaged and unpackaged irradiated products at the retail level. Picowaved is a patented term that is synonymous with food irradiation.

In commenting on the decision, Dr. Harry Mussman, chairman of the coalition, said. "Irradiation has the potential to significantly improve the quality of our nation's food supply."

"The ability to disinfest and preserve fresh fruits and vegetables using irradiation will benefit the U.S. and other nations by promoting international trade, reducing post-harvest losses and improving public health by eliminating harmful microorganisms found in foods that can cause disease".

"More than twenty-five per cent of the world's food supply is now lost to spoilage" said Mussman. "By using irradiation, certain food products previously unavailable can be preserved, packaged and shipped to needy third world countries that do not have modern refrigeration or preservation techniques."
Food Production/Management, January 1986, 10

240 Hydrogen peroxide as sterilizer

FDA has issued a final rule allowing for the use of hydrogen peroxide for sterilizing food-contact surfaces prepared from polycarbonate resins.
Food Production/Management, January 1986, 49

241 Saccharin

Saccharin is supported by the American Medical Association (AMA), according to a recent report from the organization's Council on Scientific Affairs. The report considers saccharin studies completed since 1979 and states, "Because recent epidemiologic studies provide no evidence of increased risk of bladder cancer among users of artificial sweeteners, including saccharin, and because there is no ideal alternative sweetener, saccharin should continue to be available as a food additive". Based on this report, the AMA House of Delegates recommends that the AMA "support the moratorium on the saccharin ban," joining such other health-related groups as the American Diabetes Association in supporting the continued availability of saccharin to the public.
Cereal Foods World, 31(4), 1986, 329

42 Rape oil safe for use in food

The long awaited decision by the US Food and Drug Administration (FDA) on the use of rape oil in food has finally been made. The FDA announced that low erucic acid rape oil was fit for human consumption.

The decision came following six years of pressure and requests by the Canadian government that low erucic acid should be classified as being generally safe for human consumption.

Although the US is a major producer of edible oils from crops such as soybeans, maize and groundnuts, industry experts regard Canada as a leader in the rapeseed trade. Sales of Canadian rapeseed usually amount to over $ 1 billion annually. Rape oil is the most widely used oil in Canada and is also popular in Europe and Japan.
The Oils and Oilseeds Journal, 37(7-9), 1985, 70

243 Orange oil can remove radioactive fallout from skin

Oil extracted from oranges can remove radioactive fallout stuck to human skin, Japanese nuclear energy scientists say.

Tokyo Electric Power, which sponsored the research with Toyo Engineering has decided to stockpile orange oil for workers in case of accidents at its 10 nuclear power plants. Mr. Kenichi Suzuki of Toyo Engineering, who led the joint research project, says that orange oil is 10 times more effective than conventional radioactive contaminant removers.

One such conventional remover is titanous oxide paste, which is used to treat workers whose skin may be exposed to radioactive substances while working in restricted radioactive areas.

When the skin is found to be contaminated with a higher dose of radioactive substances than prescribed, the standard procedure is to wash the skin with the removing agent and soap and water. But contaminated people sometimes have trouble removing the substances from parts of the body, such as the palm, where there are thick layers of skin.

The research work, which began two years ago, found that radioactive substances stuck to pig skin, which is similar to the human skin, were reduced by one-hundredth with orange oil, but only by one-fourth with running water and one-tenth with soap and water or titanous oxide paste.
The Hindu, June 28, 1986, 5

TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES

244 Oil Palm India Ltd to set up oil mill

Oil Palm India Ltd., a joint sector company of the Union Government and Kerala, has proposed to set up a modern palm oil mill in the State with foreign technical collaboration at an estimated cost of Rs. 5 crores, Kerala Agriculture Minister A.L., Jacob told newsmen.

The company was being used by the Centre for planning future development of oil palm cultivation in various parts of the country, he said.

The company had planted oil palms in 3,705 hectares in forest lands till June 1984 in the Anchal range of Quilon district against the original programme to plant in 6,000 hectares.

Mr. Jacob said the national policy did not allow use of forest land for cultivation and so further plantation development was held up. Since development of oil palm was of national importance, the Kerala Government proposed to take up with the Centre the question of utilisation of more forest lands for this purpose.
The Oils and Oilseeds Journal, 37(7-9), 1985, 49

245 Future food processing

Food pellets and energy bars won't replace the foods you eat today, but technology is likely to affect the way foods are processed and preserved in the year 2000, according to Theodore Labuza, professor of food science and nutrition at the University of Minnesota.

Irradiation-treating food with gamma rays or electrons-has been available since 1955. Irradiation's applications have been limited due to close control by the U.S. Food and Drug Administration, he said. Flour is now irradiated to kill insects, potatoes are irradiated to reduce sprouting and spices may receive a dose of gamma rays to destroy bacteria.

"Today, it's very, very clear that irradiation does not make food unsafe from a radioactivity standpoint," said Labuza. If the FDA relaxes regulations, irradiation will be used to increase food shelf-life, kill tirchinosis cysts in pork and salmonella bacteria in poultry, and even bypass the aging process to turn 'vin ordinaire' into fine vintage wine.

By the year 2000 processors will use more and more aseptic packing sterile packages enclosing sterile products packed in sterile environments, said Labuza. Instead of cans you'll see flexible paper or foil packages, like those used today for juices and fruit drinks.

"Some of the key nutrition issues you're going to see will be health related," said Labuza. For example, eicasopentanoic acid, a fatty acid found in ocean fish, helps reduce the chance of heart disease and the development of cholesterol deposits in the body. Mackerel contain a lot of this acid. "You rarely find fresh mackerel in the super market today because this fatty acid oxidizes so readily that it makes the product rancid in two or three days. The technological challenge for tomorrow is to stabilize these products and retain their health benefits", he said.

We'll see more "architectural" foods, Labuza predicted, produced by'grind-and-pump-it-through" techniques of food processing.

Onion rings are one example, Making onion rings from scratch is a complicated, wasteful process. The architectural method produces a uniform product and cuts onion waste, lowers labor costs, and reduces the energy inputs needed. "I would bet by the year 2000, very few kids in the U.S. would know what a real onion ring tastes like," said Labuza.

Genetic engineers are working on a "super bug" for processors to use in making cheeses and breads. Plant breeders are developing plants that are easier to harvest and process. An example is the "5-mile-an-hour" tomato that can fall 10 feet without damage, he said.

Biocatalysis techniques use enzymes to supplant chemical processes. The production of the sweetener aspartame is one example. "In the future it may be possible for processors to start with milk in one end of a large tubular reactor, add enzymes and get cheddar cheese coming out the other end," said Labuza.

Don't look for dramatic new kinds of foods in the grocery stores in the year 2000. We'll have the same foods-may-be greater variety and of better quality-but our favorite foods will still be around, he said.

Food Production/Management, October 1985, 26

PERSONALIA

246 Director, MPEDA

Dr.M.Sakthivel M.Sc., Ph.D. has been appointed as the Director of Marine Products Export Development Authority, Cochin. He took charge of the post on 9th July, 1986.
Spices Newsletter, 20(7), 1986, 11

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RAW MATERIALS

Tomatoes with higher solids content

Genetically superior tomatoes developed by DNA Plant Technology of New Jersey have been granted a Plant Variety Protection Act (PVPA) certificate by the US Department of Agriculture. This is the first PVPA certificate issued for a new vegetable variety developed through somaclonal variation.

The new high solids processing tomato was developed by DNAPT under an agreement with Campbell Soups. In field tests, the tomato has demonstrated a 20 per cent higher solids content than other commercial varieties. Increased solids in tomatoes lowers raw material costs for a food processor.

The PVPA certificate will prevent others from selling, reproducing, importing, exporting, or using the variety to produce a hybrid for 18 years.

Somaclonal variation, the technique used to develop the improved tomatoes, uncovers natural genetic variability in plants. The technique is superior to spontaneous genetic variation and mutation breeding which have been used traditionally to develop new plant varieties, the company says.

Spontaneous genetic variation occurs at a frequency too low to be used in most breeding programmes, the frequency of genetic change is significantly higher for somaclonal variation. Mutation breeding is difficult to control.. Resultant plants are usually mosaics - a large number of cells remain normal with only a few genetically altered - which require several generations to stabilise. Plants regenerated by somoclonal variation are derived from single cells and therefore mosaics occur at very low frequency.

In addition to increased solids content, the process can be used to isolate other desirable traits such as improved flavour, colour and texture.

The technique has already been successful in producing improved varieties of carrots and celery. DNAPT is working on crops such as coffee, cocoa and palm oil.
(Chemistry and Industry, September 1986, 592)

2 'Semi-naked' rice transformed

A breakthrough by Japanese scientists could make it easier for plant biotechnologists to insert genetic material into some of the world's most important crop species. They have managed to transform rice - probably the world's most important staple crop - into a form that can be genetically manipulted - a feat that has not before been achieved.

The breakthrough raises the prospect of genetically-endowing rice with resistance to disease, pests, and the ability to grow faster.

Most of the world's important crops, particularly cereals, are monocotyledenous and present difficulties for gene scientists.

The genes of dicotyledenous plants - such as tomatoes - can be manipulated genetically with the help of a bacterium - Agrobacterium tumefaciens - which infects plants and introduces its own DNA into the plant genome. As these techniques cannot be applied to monocots, scientists have sought other means to insert genetic material.

Yasuyuki Yamada and colleagues at the Kyoto University faculty of agriculture have succeeded in preparing rice cells for genetic insertion. They break rice down into single cells and use specially-developed processes to remove the outer cell walls.

In this 'semi-naked' state, the cells are clothed only in a delicate membrane which can easily be penetrated by enzymes that perform genetic manipulation - carving out slices of DNA and inserting new material.

Professor John Beringer, director of the Unit of Molecular Genetics, Woodford Road, Bristol, said that the key problems facing plant biotechnologists were twofold. 'We must endeavour to find the most important and beneficial genes for implantation - not an easy task. And we must ensure they are expressed in the correct tissues. People could get worried, he said, if the tomatoes they eat are full of genes that produce pest toxins and growth regulators'.
(Chemistry and Industry, 15, September 1986, 594)

STORAGE AND INFESTATION CONTROL

3 Natural fruit preservation process

A Revolutionary New Process from France, which claims to be a completely natural one, will soon ensure that all fruits and vegetables with a high sugar content (like prunes, carrots bananas, etc.) can be preserved for periods of two to six years without undergoing the slightest deterioration in their taste or appearance.

This French technique offers clear advantages over traditional dehydration methods. Now, on exposure to open air, preserved fruit can last up to six months. The degree of biological purity attained through the use of this method is extremely high, and what is more this new procedure is much less costly.

The new PHINE process eliminates the rehydration phase of the cycle. The fruit is exposed to varying temperatures which never exceed 75 C. Each step has been pre-determined after careful analysis of the product's sugar content and other components. The cycle is stopped when the residual degree of humidity reaches level of 35%. While the pH of fresh fruit is usually between 5.5 and 5.9, fruits treated by the PHINE process rarely surpass the level of 4. This is an important threshold, since yeast and moulds cannot develop at this level.

The principle behind the PHINE process is based on complex notion of organic chemistry in simple terms, the heat provides the energy necessary for an architectural reorganization of the sugar molecules of the fruit. The product is stabilized at a particular balanced level that can only be destroyed by temperatures lower than 20 C or greater than 72 C. Moreover, bacteria undergo a sort of "cleaning" and desporulation. Enzyme chains are inactivated.

During the last step of the process water is trapped inside the fruit enmeshed between water and sugar molecules. The blocking of an active transfer of the water molecule from one milieu to another has already found numerous and important uses in the production of a whole line of food products, such as biscuits, chocolates, breakfast cereals, fruit yoghurts, diet products, etc.
(Beverage and Food World, July/September 1986, 56)

4 New method to keep vegetables fresh

A combination of ozone, carbon dioxide and gamma rays can be ten times better as a preservative for vegetables and fruits than the traditional methods, Soviet researchers claim.

The ozone-carbon dioxide combination, developed by scientists of the Institute of Chemical Physics of the USSR Academy of Sciences, disinfects the storages and retards the ageing process of vegetables.

While studying the ageing mechanism of potatoes, it was noticed that doses of gamma radiation which are safe for human beings eliminate nearly all centres of infection in tubers and prevent their sprouting.

Laboratory tests of the new method have proved its efficiency, 96 per cent of potatoes stay nutrient and tasty for 12 months.
(The Economic Times, 4 December 1986, 7)

5 Preventing cassava spoilage

Some 700 million people receive from 200 to 1,000 calories a day from cassava. However, this starchy root crop - one of the least expensive sources of calories in many areas - could play an even more important nutritional role if it were not so perishable.

It begins to spoil only two or three days after harvest and existing preservation techniques (packaging it in boxes filled with sawdust or paper, freezing it) are often not economically feasible in markets where the increased consumption of the crop would do the most good.

Scientists working for the Tropical Development and Research Institute (TDRI) in London and the International Tropical Agriculture Center (CIAT) in Colombia have discovered a way to store cassava safely and inexpensively for two weeks.

Their methods involves: treating the roots with a thiabendazole-based fungicide; and packing them into polyethylene bags. Storage in the bags results in high enough temperature and relative humidities for curing to take place, while the fungicide controls microbial growth. Roots can be stored in quantities ranging from less than one kg to over 20 kg per bag. The cost in Colombia (the test site) is a mere 5 per cent of the current market price.

One caution: Treating and packing the roots must be done in the farm. A delay of only four hours between harvest and packing can increase losses after one week of storage from 2 to over 30 per cent.
(ASEAN Food Handling Newsletter, January 1987, 9)

6 Blue star introduces modular cold storage system

Blue Star has recently introduced a new concept of modular cold storage system in India which is expected to find wide acceptance in the chemical and pharmaceutical industry, restaurants, hotels, etc. The Storekool Cold Rooms are considered the ideal answer for the storage of expensive and critical products as they provide tremendous scope for expansion or reduction in size and the cooling options. The heavy duty compact refrigeration unit can be adjusted to maintain

temperature of either between 4 C and 10 C or -10 C and -15 C. These units are designed to work efficiently under extreme ambient conditions and provide the facility of being serviced/replaced at extremely short notice. Within the parameters of desired temperature control, the refrigeration units are designed to keep the humidity levels at 75-80% RH. This extends the storage life of fruits, vegetables, dairy products, etc. and preserves the original taste longer. The unique features incorporated in the Storekool include the following. Its modular construction enables quick assembly and also expansion or re-location at a later date. There is complete absence of wooden sections from panels. Instead, injection moulded polyurethane foam insulation provides the requisite insulation and dimensional stability. The special jointing and the built-in locking arrangements ensure a leak-proof sealing. For further information write to: Blue Star Limited, Shiva-e-Numh, 205, Dr. A.B.Road, Worli, Bombay 400 018.
(Industrial Products Finder, December 1986, 75)

Food irradiation: Correcting misperceptions with facts

Misperceptions about the technology of food irradiation following the Chernobyl accident have heightened the need for sound scientific information about the food preservation process, in the view of international authorities in food and health fields.

Specifically, the experts express concern over reported misconceptions that wrongly equate food irradiation with either contamination by radioactive fallout or with nuclear waste. The inaccuracies serve to confuse and, in some cases, unnecessarily frighten consumers seeking to make educated choices or judgements about the food preservation process, experts say.

The views were expressed at the third annual meeting of the International Consultative Group on Food Irradiation (ICGFI), which met in Vienna from 21-23 October. ICGFI was formed in 1984 by the United Nations Food and Agriculture Organization (FAO), the World Health Organization (WHO), and the IAEA. It is composed of experts designated by Member States to evaluate and advise on global activities in food irradiation. Twenty-six governments have joined the group and are contributing financial support.

At the meeting, experts reviewed the weight of scientific research on the safety of food irradiation. They stressed that procesing by ionizing radiation does not make food items radioactive and that the safety of the technology has been firmly established through research and commercial uses. In 1980, the International Joint Expert Committee on Food Irradiation, convened by the FAO, IAEA, and WHO, objectively assessed all available research findings on the wholesomeness of irradiated food. That report, and the subsequent recommendation by the Codex Alimentarius Commission (the international body setting food standards), support the safety of food treated by specific types of ionizing radiation up to a dose of 10 kilogray. No new research data suggests otherwise, ICGFI concluded at its October meeting. Experts also accepted task force reports that highlighted the need for the introduction of the technology to ensure the hygienic quality of food, as well as for the quarantine treatment of fresh fruit and vegetables.

In a related development, irradiated foods have been sold commercially for the first time in the United States. Irradiated mangoes imported from Puerto Rico were placed on the sale during a limited marketing test at a shop in Miami, Florida. The fruit was irradiated in a plant in San Juan, then flown to the USA for sale. More than 20 cases of the irradiated fruit were reported to be sold quickly.

The United States, which has moved to ban the use of certain chemical fumigants for food treatments, has adopted regulations allowing the use of irradiation for fruits and vegetables, herbs and spices, potatoes, wheat, wheat flour, food grade enzymes, and pork products to control parasites. Currently, 18 countries are commercially using irradiation to preserve and decontaminate several kinds of foods and food ingredients, based on reports to the IAEA.
(IAEA Newsbriefs, 10 November 1986, 4)

8 Bingo for pests

Liquids, sprays, funny smelling sticks, powders and chemicals have been introduced in the Bombay market to drive away pests from houses. But rats, cockroaches and other pests do surface again in most Bombay homes.

A non-resident Indian, ST Kothari, after successfully marketing a glue to catch pests in the Far East is all set to launch his product in India.

The product was being test marketed in Akbarally's Bombay recently. Bingo, the glue to catch pests, was first launched in Malaysia in 1978, says Kothari. The product is sold all over the Far East Asia including China, Taiwan, Hong Kong, Phillipines and Malaysia.

The product will be initially launched only in Maharashtra said Kothari. He said that soon after the product turned out to be success in the Far East, he had plans to start manufacturing this product in India. But because of the cumbersome "procedures and formalities to start an industry in India we had to postpone the plans for manufacture of Bingo in our own country".

He said presently his company, Rambo Chemical Industries Pvt. Ltd. will manufacture and market three products -- rats and rodents glue, cockroach glue and fly glue. In a month's time, the company has plans to introduce a glue to capture lizards too.

He claimed that the lizard glue will be the first product in India which is non-poisonous as all the other lizard pesticides are poisonous.

To fight white ants, he said, his company was preparing a special powder which should be coated on the walls before painting. This coating will ensure a white ant free home or office for atleast five years, he claimed. For further information contact: Rambo Chemical Industries Pvt. Ltd., Sanjay Building, No.5B, Unit No. 159, Andheri Kurla Road, Saki Naka, Andheri East, Bombay 400 059.
(Beverage and Food World, July/September 1986, 65-66)

FOOD ADDITIVES

Aspar-Mate flavours

Aspar-Mate solves the problems of a lingering sweetness and a watery mouthfeel associated with beverages formulated from Aspartame, say California Brands Flavors Inc of 9839 Gould Street, Oakland, CA 94603, USA. Aspar-Mate is a new product line that not only solves these problems but its extensive line of both natural and artificial flavours was created to be specifically used with aspartame sweetened beverage products. The line ranges from cola to root beer to clear and cloudy citrus to other fruit flavours.
(Food Trade Review, August 1986, 392)

PROCESSES

0 New milk concentrating method developed

Mr.Stewart Marshall, of CSIRO's division of food research in Melbourne, could substantially reduce the cost of bulk milk transport. The milk concentrate is highly palatable and has improved the flavour of milk drinks usually fortified with evaporated milk.

The process, known as reverse osmosis concentrating, uses technology from the water desalination industry. Whole milk is pumped over polymer membranes which permit the passage of water but not that of whole milk molecules.

Mr.Marshall said this halved the volume of the milk without the loss of palatability or of energy use in the evaporating processes. The milk was reconstituted by adding water. He said the reduced-volume milk also benefited the processing of cheese because its use reduced curd loss during whey removal.
(Dairy Guide, 9(1), 1987, 49)

11 Garlic oil at low cost

The Bangladesh Council of Scientific and Industrial Research (BCSIR) has developed a simple process to obtain garlic oil at a very low cost (US $ 0.50/bottle of 100 ml).

As envisaged by BCSIR, the maximum plant capacity is 800,000 bottles of garlic oil, each containing 100 ml, annually in 300 working days in single shift of 8 hours. But a financial analysis and cost estimate have been made based on 200,000 of such bottles which is only 25 per cent of the maximum capacity. A filter press and a crusting machine are the main machinery required for the process, the cost of which may come to US $ 14,000. A working capital of US $ 38,000 would be required to launch the process. With the manufacturing cost coming to US $ 70,000 and sale price of the bottle of 100 ml garlic oil at US $ 0.50 a 28.43 per cent return on sales and 76.31 per cent return on investment could be expected.
(Deccan Herald, 2 February 1987, 15)

12 Know-how for manufacture of non-alcoholic beer

Know-how for manufacture of a world famous brand of alcohol free beer is available from Hurliman of Switzerland under licence in India. This non-alcoholic beer brewed by a patented process after several years of research looks and tastes exactly like any normal alcoholic beer. It contains many valuable minerals and vitamins and is extremely low in calories. Over 10 million litres are sold every year all over Europe and is one of the premium malt beverages in the world, it is said. For further information write to: Impetus Incorporated, M-8, Anna Nagar, Madras 600 102.
(Industrial Products Finder, November 1986, 62)

13 An hydraulic oilseed press

An hydraulic oilseed press was designed by W.D.J. Whitehead of the Tropical Development and Research Institute (TDRI) which can generate sufficient pressure and still be manually operated. The design uses a commercially manufactured hydraulic press and a locally fabricated oilseed 'cage' and piston. The cage is made from a short length of 4-inch galvanized iron water-pipe, with a series of 3 mm holes in its lower half to allow the oil to seep out. A base and top are clipped on to the pipe, and the top includes a guide hole for the piston.

To operate, the cage must be filled with oilseeds and the base and top clipped in place, with the piston placed directly on the seeds. The cage assembly is placed on an oil-collecting tray, and then together these are placed on the adjustable table of the bench press. The hydraulic ram is lowered to cover the piston which can then be aligned by hand. The pressure is increased by hand pumping until it reaches the maximum eight tonnes. This pressure is maintained by occasional pumping for about 20 minutes, during which time the oil seeps out of the cage holes into the collecting tray. The cage assembly and tray are removed after retracting the ram; the oil is poured into a settling bucket, and the base of the cage removed to extract the crushed seeds. The process can then be repeated. Each batch of approximately one kilo of seed takes 25 minutes (but one person can operate two or even three machines). The crushed seeds can then be ground by a hand grinder, or pounded, and used as animal food (in our case for fish and ducks). Oil yield varies with the type and quality of seed, but the average is 250 ml oil per kilo of seeds, or one litre of oil from four kilos of seeds. Sunflower seeds and groundnuts are decorticated first; sesame seeds can be crushed without preparation.

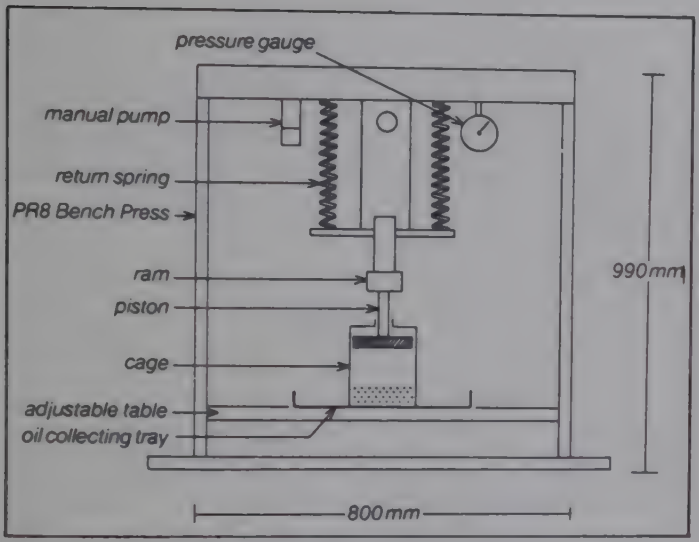

pressure gauge
manual pump
return spring
PR8 Bench Press
ram
piston
cage
adjustable table
oil collecting tray
990mm
800mm

Figure 1. The hydraulic oilseed press.

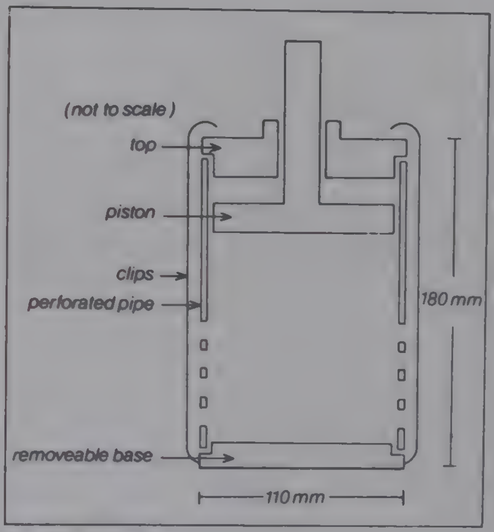

(not to scale)
top
piston
clips
perforated pipe
removeable base
180mm
110mm

Figure 2. Detail of the cage.

The cost of the press is made up of the imported hydraulic components, and the locally fabricated cage and piston. The 1985 price of the complete 'Proteus 8-Tonne Bench Press' ex Birmingham was US$ 290; the cage and piston cost the equivalent of $120 in Tanzania. For further information write to: Peter

Kenworthy, Mpango Wa Ufugaji Samaki (Fish Farming Development Programme), PO Box 301, Dodoma, Tanzania.
(Appropriate Technology, 13(3), 1986, 9)

BYPRODUCTS AND WASTE UTILIZATION

Nil.

PROCESSED PRODUCTS

14 Self-heating meals made in can

Plans to introduce self-heating meals in a can to Canada and to build a $ 1.5 million manufacturing plant have been announced by Hotcan Products Alberta Ltd. The plant will produce 4 million hotcans a year and employ 20-30 people. Developed in Britain, the hotcan is a 15-oz can of food placed inside a larger can containing a mixture of limestone and water. When the outer can is punctured with a spike, a chemical reaction takes place heating the inner can to 70-80 C in 10-15 min.
(Food in Canada, July/August 1986, 10)

15 Heat 'N' eat meals coming

With "ready-to-heat and eat" meals having a shelf life of two years, Indian food industry goes yet another step forward in offering the consumers processed and packed foods. So far, we had ready-to-cook and service kinds of products like noodles, soups, curry, sambhar, idli-sambhar, idli-dosam mixes etc. But full meals that can be directly consumed have not been available till now.

All Seasons Foods Ltd. and Tasty-Bites Ltd are the two companies which will perhaps be the first ones to introduce such ready-to-heat-and-eat foods in India. According to a spokesperson of All Seasons Foods, initially they will have a 40 products menu, catering to almost all tastes and these products such as biryanis, tandoori chicken, a variety of vegetarian and nonvegetarian dishes are developed by the well-known culinary expert Taria Dalal. These food products according to the company sources, will be priced in the range of Rs. 12 to Rs. 20 per packet which will contain a single dish or a full meal of three-four dishes sufficient for one person.

The packaging will be of three types: retortable pouch, aluminium tray and plastic container, which will be locally manufactured. All one needs to do is to put the packet in the oven or in boiling water, tear or peel off the seal and serve or directly eat. No need to empty the contents in a vessel for heating and need to process it any further.

The technology for All Seasons Foods is developed by Mr. Brain Smith of Booth and Smith Associates, U.K., who are the official consultants to the World Bank and U.N. aided projects. Company's main plant is under construction at Nasik and the total project would cost around Rs 7 crores.

All Seasons Foods is launching the first batch of their products i.e. sauces, snackfoods, etc. within 15 days. It also plans to introduce slimming foods called micro-diets which will be sold in a weekly ration of three per day for Rs. 180.
(The Economic Times, 18 January 1987, 1)

EQUIPMENT AND MACHINERY

16 Soya flakes

A new machine to process soydhal (cotyledons of the bean) into elongated flakes has been developed at the Central Institute of Agricultural Engineering, Bhopal, India.

The machine consists of three knurled chromium-plated rollers driven through gears by a one HP (0.75 kw) electric motor. The flaking takes place in two stages between the rollers which have varying speeds of 100, 200 and 400 revolutions per minute. The knurling on the rollers helps in stretching and elongating the grain while being pressed. Pressing increases the surface area and decreases the grain thickness thereby improving the water absorption capacity by 2.27 times and the cooking quality of the soybean. The flakes have bulk density of about 400 kg/sq.m. Each flake measures about 16 mm long, 11 mm wide and 0.6 mm thick.

The capacity of the machine is 20 kg/hour. The machine which weighs about 800 kg is estimated to cost about US $ 250.
(Deccan Herald, 2 February 1987, 15)

17 Mircowave power generators

These may be used in the design of industrial microwave processing systems. Generator model IV6 is fully adjustable from 0.5 to 5 kw and the IV50 is adjustable from 0 to 50 kw. These low maintenance, long-life stainless steel generators may be used for a range of applications and are compatible with continuous, batch, microwave/convection, and R&D ovens/driers. For 2-p specification sheets on both generator models. Write to: Microdry Corp., 3111, Fostoria Way, San Ramon, CA 94583.
(Food Technology, September 1986, 136)

18 Compact fermentation system

Compact fermentation system called the Omni-Culture fermentation system is composed of a bench-top fermenter, a pH controller, a dissolved oxygen indicator, and an antifoam controller. The system is compact, light-weight, and modular. Users may assemble the units in whatever combination best suits their requirements. All Omni-Culture system components that come in contact with fermentation liquids are made of nontoxic, noncorrosive, repeatedly autoclavable materials. Using aseptic operating techniques, the system reportedly maintains sterility even during prolonged research studies. For more information write to: The Virtis Co., Inc. Rt. 208, Gardiner, NY 12525
(Food Technology, October 1985, 82)

19 Simple pasteurizer

A simple pasteurizer and bottling system developed at the University of Florida (Citrus Research and Education Center) in Lake Alfred allows acidic fruit and vegetable juices to be preserved for several months.

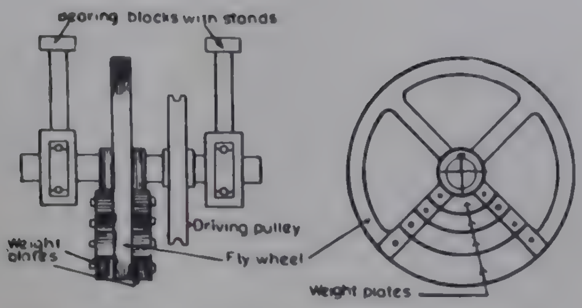
The main attraction of the pasteurizer for developing countries is its low cost and simple design. The complete system can be built for less than US $ 50 by villagers using locally available materials. Materials consist of a stainless steel coil, a garbage-type tin can surrounded by bricks, used beer bottles, a portable bottle capping device and a thermometer.

The juice is poured through the tubing while it is immersed in boiling water and allowed to run by the force of gravity. The pasteurizer fuelled by wood can process about a half-gallon of juice a minute or about 1,500 12-ounce bottles a day. For further information write to: Dr Philip Crandall, Citrus Research & Education Center, 700 Experiment Station Road, Lake Alfred, Florida 33850 USA.
(ASEAN Food Handling Newsletter, January 1987, 9)

20 Tea grading sifters with no crank and connecting rod

The existing tea grading sifters that work with crank and connecting rod produce a knocking sound, which is a nuisance. Besides, their becon bearings and pins need regular maintenance. To overcome these problems an unbalanced fly-wheel system is developed. It has no crank and connecting rod which means reduced noise and maintenance cost.

This system is specially suitable for tea sifters, packing machines and vibrating tables. The number and length of strokes can be arranged by adding weight-plates, while speed can be varied by changing the motor pulley.



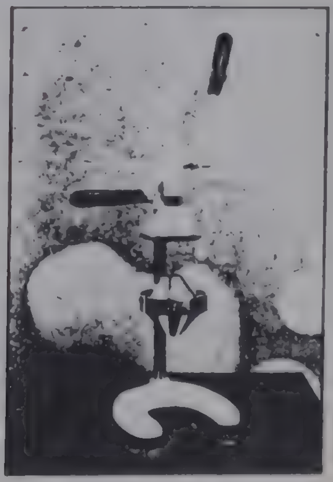
Technical details of this system can be had from A.K. Chary, 41, 5th street Extension, Gandhipuram, Coimbatore, 641012.
(Invention Intelligence, October 1986, 345)

21 Heatable plastic beakers

These are available in 3 sizes, are described in a 2-p full-colour brochure. The brochure, "N-209 285," provides complete technical information, details on recommended applications, and colour photos of the beakers. It also includes pricing in single quantity and case lots. Available in 100-, 250-, and 500-ml capacities, the translucent Type HP beakers can be heated directly on a hotplate. Unlike glass beakers, Type HP beakers are shatter-resistant. Copies of the brochure may be obtained by contacting Nalge Co., Box 365, Rochester, NY 14602.
(Food Technology, October 1985, 159)

22 Mini-juicer

Production of fresh orange, lemon, lime and grapefruit



juice may be accomplished with the countertop Mini-juicer.Theunit eliminates many of the problems associated with

hand squeezing juices and yields more juice per fruit because pressure is applied evenly with a hand lever. A removable stainless steel strainer cup stops seeds and directs the juice from spout to glass in one step. The juicer requires only a few minutes to clean. It is mounted on a non-slip base, and the strainer receptacle is adjustable for use with tall containers. For more information, write to Kingman Industries, 1500 E, Chestnut, Santa Ana, CA 92701.
(Food Technology, October 1985, 152)

23 Improved detector for microbes

A Welsh firm, the Cardiff Laboratory for Energy and Resources, is experimenting with an automatic method of detecting microbial contamination in food that it hopes to market commercially within 12 months.

It claims that the desktop detector is 100 times more sensitive than products at present on the market and is capable of pinpointing small numbers of bacteria in tests carried out on yeasts, meat and milk.

Dr.David Stafford, chairman, said that the experiments carried out so far had been extremely successful and 20 machines were about to be tested by food, medical, pharmaceutical and water industry organizations.

"We hope to have the trials finished by the end of this year and go into commercial production shortly afterwards. The machine will give a much quicker and more accurate assessment of bacteria and provide an instant warning when there is any contamination".
(Food in Canada, July/August 1986, 15)

24 Anodized aluminium pallets

Skypharma Industries has introduced a complete range of anodized aluminium pallets to cope with the mass scale production in pharmaceutical and processed food industries. These pallets are light in weight but sturdy in structure. Their uniformity and smooth surface facilitate quick mobility on any type of conveyors, roller tracks, and fork-life trucks. The newly developed anodized aluminium pallets are an improvement over the wooden pallets in meeting the GMP International Standards of Hygiene. The pallets are easy to repair, handle, stack and wash. A jet of hot water is sufficient for quick cleaning and drying. For further information write to: Skypharma Industries, 78, Raja Industrial Estate, Purshottam Kheraj Road, Mulund (West), Bombay 400 080.
(Industrial Products Finder, December 1986, 101)

25 Dual media filters

Water Treatment Engineers manufactures dual media filters which convert canal water, river water, and muddy water of other sources into sparkling clean drinking and process water. The incoming water is chemically conditioned by dosing chemicals such as soda ash, alum, bleaching powder and straightaway passed into dual media filters. These filters avoid separate coagulation, flocculation and clarification due to the in-built system to perform all these operations. These filters can filter water of turbidity upto 1,000 ppm. These filters can also be used for treatment of waste water more economically as they cost less and require lesser space than larger diameter clarifiers. They are available in 12 STD model with diameter 500 to 1,600 mm and for flowrate of 25 M^3 per hour and above. For further information write to: Water Treatment Engineers, 34A, Rameshwar, Four Bungalow Road, Bombay 400 058.
(Industrial Products Finder, November 1986, 67)

26 Bottling plants

A wide range of bottling and allied equipment for beer, soft drink, fruit juice, distilled spirit and oil industries is of offered by Larsen & Toubro Limited in collaboration with Seitz Enzinger Noll (SEN) West Germany, a world leader in the field. The range of equipment includes low-vacuum bottling systems and pressure filters in single and multiple chamber design for manual, semi-automatic or fully automatic operation which can be combined with one or several sealers, bottle washing machines for recycled containers in single-end and double-end design with the latest equipment like ultrasonic irradiation station. Also available are bottle sterilisation machines, tunnel pasteurisers and coolers, conveyor plants, packers and unpackers, premixers, impregnation equipment, beverage mixing plants and a wide range of filters. For further information write to Larsen & Toubro Limited (Food Processing Division) P.O. Box 278, L&T House, Ballard Estate, Bombay 400 038
(Industrial Products Finder, November 1986, 151)

27 Industrial mixer

Fabdecon Rotstator Mixer has been designed for many applications in various industries. The mixing head consists of internal rotor surrounded by freely revolving stator. The stator has three large external paddle blades. The rotor draws the mix into the stator where the high shear action between the high speed rotor blades and slowly revolving stator rim subjects the material to effective mixing, milling and grinding action prior to being expelled with high velocity through openings. Particles, aglomerates, solids, etc, are exposed to intense cutting and disintegrating actions for a further reduction of the particle size. All the contents of the mixing vessel passes through the mixing head a great number of times

during the process and homogeneous product is achieved. The function of the large external paddle blades helps in ensuring that the entire batch is rapidly involved in the mixing process (i.e., there are no dead zones); frictional heat is distributed to the entire batch and hence eliminates high temperature in the vicinity of the mixing, possible lumps of powder, etc, stuck to the stator is immediately "washed off" and involved in the mixing process; and the vibrations do not occur even when breaking hard solids, because the freely revolving stator abosrbs and equalises the shocks. This special construction involving a rotor and a stator combination does not need additional tie-rods to support the stator. As a result of this, alignment between rotor and stator is automatically taken care of. Also, maintenance with regard to the bush bearings is minimum. Fabdecon Rotstator mixer can be used effectively for dispersing, dissolving, milling, emulsifying and homogenising. It finds ready application in antacid, cold creams, cosmetics, drugs, dissolving pectin, essential oils, food, insecticides, gum dispersions, pesticides, jellies, wax emulsions, etc. Fabdecon Rotstator Mixer can be supplied in capacity ranging from 0.75 HP to 40 HP, and in all materials of construction. For further information write to: Fabdecon Engineers, 138, Damji Shamji Industrial Complex, (Near Sanghi Oxygen), Off Mahakali Caves Road, Andheri (East), Bombay 400 093.
(Industrial Products Finder, December 1986, 103)

28 Low-priced bottle rinser

The latest bottle-rinsing machine from GAI is a compact unit designed specifically for smaller bottling lines, with a capacity range of 1200 to 3000 bottles an hour, and will therefore be of great interest to New Zealand wineries and juice processors with their comparatively lower throughput requirements.

Because of the distinct price advantage over similar equipment, GAI's NZ agent Protech Engineering expect a heavy demand based on the ready acceptance of GAI's larger machines.

The unit will handle all types of glass and plastic bottles. For further information write to: Protech Engineering Ltd, Box 12-052, Auckland 6.
(Food Technology in New Zealand, September 1986, 33)

29 Dal milling machine

The G.B. Pant University of Agriculture and Technology has developed a unique low cost dal (pulses) milling machine which gives higher recovery of dal, minimising milling losses considerably. Disclosing this. the University Vice Chancellor, Mr. Kripa Narain said that this latest machine, specifically developed for milling bold grain pulses like pigeon pea (Arhar), gram and soybean, could enhance dal recovery upto 80 per cent with 97 per cent dehusking in a single pass of grains pre-treated with sodium bicarbonate. The recovery of dal using traditional methods ranged between 68 to 71 per cent, he said.

Developed at the University's Centre of Advanced Studies in Technology, the milling process including pre-treatment of grains, costs around Rs. 40,000 against Rs. 2.5 lakh for that of conventional milling process. The conventional milling process requiring repeated wetting and drying cycles, do not allow complete dehusking in a single operation. Repeated passes through rollers caused scouring of the grains resulting in heavy losses in the form of "broken" and powder besides affecting the produce quality.
(University News, 8 December, 1986, 14)

30 Microwave drier

Hi-Tec Systems recently launched multi-magnetron continuous process commercial microwave drier has already aroused the interest of many sectors of Australian industry and could generate hundreds of millions of dollars in export sales, according to its designers. The company has been approached by members of the mining, agriculture, cosmetic and food manufacturing industries, including a biscuit manufacturer and an agricultural concern interested in using it for grain drying. Successful trials have been carried out on food products such as wheat, rice, pecans, macadamias, flour and hops.

Designed by a research team led by engineer Mr Alan Fry and developed through State and Commonwealth grants, the drier permits continuous process drying with a high level of control and energy efficiency. The drier has produced results demonstrating an energy consumption of less than half that of a comparable gas or oil fired drier.

The drier's choking system retains virtually all microwaves within the system, and an unimpeded conveyor moves product in, and then out, of the drying chamber. Whereas traditional chamber design has allowed for only one magnetron per chamber, the chamber configuration in Hi-Tec Systems' drier enables magnetrons to be fired side by side and opposite each other, with 16 magnetrons in each chamber. For further information write to Mr. Keith Thornton, 4, Morona Avenue, Wahroonga, NSW 2076.
(Food Technology in Australia, August 1986, 314)

31 Infra Red technology for roasting

A new type of roasting machine has been developed by Maschinenfabrik G.W.Barth Ludwigsburg GmbH & Co of Martin Luther Strasse 44, Postfach 160, D-7140 Ludwigsburg, West Germany, which, through the use of infra red rays, allows nuts and other seed kernels to be roasted evenly and thoroughly within 6-10 minutes.

A spiral transport channel conveys the seeds gently through the roaster. Kernel damage is, therefore, prevented and surface oil seepage avoided. Storage quality and shelf life are greatly improved; the percentage of fines, breakage and splits is kept to a minimum. In addition surface bacteria are greatly reduced.

The infra red radiators reach the desired roasting temperature almost immediately. Time and energy loss during startup or product changes are avoided.

The new roasters are being offered in four capacity ranges, up to 100, 200, 300 and 1000 kg per hour.
(Food Trade Review, June 1986, 282)

32 Efficient use of steam and fuel

Stirling Engineers has a team of qualified and experienced consulting engineers specialising in fuels, combustion, heat transmission and energy conservation. The firm undertakes to evaluate existing energy related systems in plants and advise methods for efficient use of steam and fuel and to maintain the performance of equipment on peak load. The firm's main activity is designing and procurement of utility piping systems for process, heat drop, preparation of steam distribution systems, condensate handling, and heat balancing on various equipments. The firrrm also undertakes to design work heat recovery systems, fabrication and erection of all types of boilers, generators, oil storage tanks, chimneys, etc, and preparation of preliminary survey reports on boiler heating equipments and various other machinery. The firm guarantees fuel, steam and energy savings, by shortening the processing sequences through its action plans. For further information write to: Stirling Engineers, 2-D2, Basant Park, Chembur, Bombay 400 071.
(Industrial Products Finder, December 1986, 7)

33 Washing crates with sound waves

With the advent of Ultra Clean Ultra Sound cleaning jet washing is said to be history.

Plastic containers are totally immersed in a hot detergent solution, and floated over transducers pulsating at 40,000 times per second. At this frequency miniature air bubbles are created which immediately implode to produce an effect known as cavitation.

Far from being the scourge known to owners of outboard motors, cavitation reaches every submerged surface to give a thorough scrubbing action and release every particle of dirt.

Ultra Clean machines complement ultrasonics with two jetting actions. The first is a medium pressure, hot, penetrating detergent rinse. The second is a low pressure, hot, clean water rinse.

A centrifuge removes all dirt down to size of five microns from the system, and, because high pressure jets are not used, there is no need for anti-static agents in the final rinse. For further information contact: CBS Engineering Ltd, Christchurch, Auckland.
(Food Technology in New Zealand, May 1986, 31)

PACKAGING

34 Low cost food packaging

Lilypak Industries Ltd and Synergetic Systems Ltd have combined their packaging expertise and knowledge of the hospitality industry to offer a lowcost sealing system for food processors and fat food operators of any size.

The packaging system, called Seal-Tite, is simple to operate and versatile in its application, the manufacturer says. The system uses ex-stock containers and lidding film which provides the consumer with attractively and hygienically packaged food items. Included in the range of containers are trays suitable for use in microwave or conventional ovens.

The system is suitable for packaging sandwiches, salads, fresh and preserved vegetables, nuts, confectionery, cakes and a wide range of chilled and frozen convenience meals.

Lilypak's brand manager, Suzanne Nicholson, says that Seal-Tite System's greatest benefit is in its ability to bring low-cost attractive packaging to all food processors and fast food operators. For further information write to: Lilypak Industries Ltd, Box 21-296, Auckland 8.
(Food Technology in New Zealand, August 1986, 54)

35 Vacuum packaging machine

The Vacpac from Wimco is a semi-automatic, chamber model vacuum packaging machine, suitable for packing products like meat, fish, butter, cheese, fresssh vegetables and fruits, sweetmeats, etc, under absolute vacuum. This machine is a mobile model having a slanted evacuation chamber which prevents soiling of seal area even while packaging liquid products like juices and sauces. The products, pre-filled in pouches, is placed inside the chamber with the seal area in contact with sealing bars. The requisite amount of vacuum is applied and the pouch is automatically sealed after completion of the

evacuation process. Thereafter, the chamber opens automatically. The maximum length of the seal is 450 mm. An optional attachment is the inert gas flushing system which can be provided if desired. The machine has an output of 5-10 packs per minute depending on the pack size. The machine being very compact can be placed at the point of sale. Wimco can also recommend the proper type of packing of products. For further information write to: Wimco Limited, Engineering Division, Indian Mercantile Chambers, Ramjibhai Kamani Marg, Ballard Estate, Bombay 400 038.
(Industrial Products Finder, November 1986, 75)

36 Waxed/polycoated wrappers

CPS manufacturs waxed/polycoated wrappers, plain as well as printed, for use by manufacturers of bread, biscuits, soap/detergents and engineering products, as moisture preventive packaging material. Waxed paper is supplied in cut sheets or in roll form. Multi colour printing of wrappers to customers' designs and specifications is undertaken. For further information write to: Commercial Packing Services, 53/54, Unique Industrial Estate, Dr. R.P. Road, P.B. No. 7773, Mulund (West), Bombay 400 080.
(Industrial Products Finder, November 1986, 40)

37 Flexible package to drinking

A flexible package with a built in straw for single portions of fruit drinks, juices and soft drinks has been developed by Van Leer Packaging Systems.

Called Probit, the packs are manufactured using customised horizontal form, fill, seal machinery incorporating a purpose built straw insertion mechanism.

The straw is housed in a sleeve valve with the open end hygienically covered with a peel off label. When the label is removed, the straw is straightened and the pack is opened by a simple downwards push to pierce the sleeve valve seal.

The use of a flexible straw ensures that it is contained within the dimensions of the pack in transit and display. But, once opened, the straw extends well-beyond the package top.

Although the Probit is a flexible package, it has been designed to ensure that the opened pack can be placed face down on a flat surface with no danger of spillaggge or leaking.For further information write to: Van Leer Packaging Systems, Cobham, Surrey, UK.
(Beverage and Food World, October/December 1986, 55)

38 Flexo film wraps

Flexo Film Wraps (India) Ltd., is introducing in India a new packaging concept for domestic and industrial usage. The product is a stretchable film wrapper ideal for protective covering of cooked and uncooked food, cut or processed fruits and meat, fish, vegetables and sweets.

The company has put up a plant with a licensed capacity of 720 tpa with an installed capacity of 330 tonnes at Waluj in Maharashtra. The trial production has already commenced and commercial production is expected to start shortly. It has imported specially fabricated plant and machinery from Taiwan.
(Beverage and Food World, October/December 1986, 41)

ANALYSIS

39 Microwave drying system

Model MDS-81 is a precise microwave drying system for moisture/solids determination or use as preparative step for other analytical procedures. A unique feature is its ability to dry sample analytically (less than 0.1 mg water) in minutes. Water molecules absorb the microwave radiation causing an increase in molecular motion (rotational). Due to this absorption of energy, the water is selectively heated and removed through vaporisation. Because of large oven cavity size, multiple samples can be easily dried at the same time. An optional rotating turntable is available to accomodate multiple sample testing. Also using thermaped technique. MDS-81 allows drying for free and "bound" water. Readout is provided by a 20-digit alphanumeric display. Programming key board with 15 keys to enter data and run samples is provided. Typical applications for solids, liquids and slurries are in chemicals for solutions, powders, emulsions, dispersions; food, pharmaceuticals; dairy; tobacco; etc. Manufactured in the USA, MDS-81 microwave drying system is importable under OGL. For further information write to: Neotronics International, P.O. Box 7754, Bombay 400 080.
(PFNDAI Newsletter, No. 43, October 1986, 2)

40 Fast, consistent tenderness ratings

A tenderometer has been developed by the Meat Industry Research Institute of New Zealand (Inc), MIRINZ, to measure the tenderness of all types of meat and muscle foods.

A small cooked sample of the meat to be measured for tenderness is placed in a sample holder between two metal teeth which are then forced together. The pressure needed to shear through the meat is displayed in kilopascals (kPa) on the force guage.

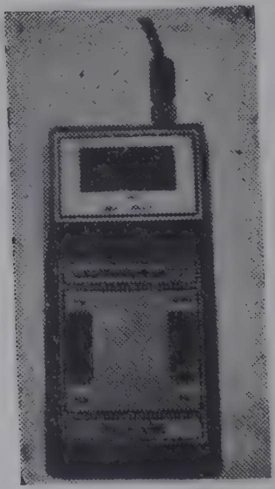
The MIRINZ tenderometer is entirely pneumatic, operating from any compressed air source of 450 to 600 kPa (65 to 87 psi). It is solidly constructed to give years of trouble-free service.

Safety features include a shielded start control, an instant-stop facility and an overload protection to safeguard the force guage. An internal regulator minimises variations in supply line pressures and a vapour trap and oil mist lubricator are fitted.

The casing and all components in contact with sample are stainless steel and easy to clean. A hinged back plate provides access to internal parts by removing two screws. The tenderometer is marketed by: Scientific Products Division, Smith-Biolab Ltd, Private Bag, Northcote, Auckland.
(Food Technology in New Zealand, April 1986, 19)

41 Portable measuring unit for humidity

Ultrakust's hygrophil is a complete portable measuring unit for humidity and temperature. The instrument obtains its measuring data according to the psychrometric principle; therefore it operates with highest precision.



The Hygrophil

The additional data that this sensitive yet very sturdy instrument can provide is temperature, actual vapour pressure, relative, specific and absolute humidity, dew point temperature, enthalpy and other climatic characteristics. Its important characteristic feature include: digital measuring display; battery operated; computer controlled; temp. measuring range of - 30 to + 150 C and RH measuring range of 1 to 99%.

The instrument is available in different models with various probe options for specific applications. The Hygrophil is quick, accurate and designed to be efficient in roughest conditions and is meant for stationary as well as field use. For further enquiries contact: Ultrakust's representatives in India: Arctic India Sales, 20, Rajpur Road, Delhi 110 054.
(Beverage and Food World, July/September 1986, 65)

42 Automatic Oil/Fat determinations

This may be performed with the Foss-Let MkII which can be used with a variety of solid and semi-solid foods. Each determination takes 5-8 min, and one operator can handle 8-12 samples/hr. The Foss-Let MkII includes an improved sample preparation unit, the homogenizer, which is easy to operate, produces little noise, is easily serviced, and requires less space. The instrument features a direct digital readout which simplifies operation, reduces contact with solvents, and offers improved reproducibility. For details, write: Foss Food Technology Corp., 10355 W.70th St., Eden Prairie, MN 55344.
(Food Technology, July 1986, 105)

43 Computerised wine testing

The art of wine testing will soon become obsolete. The Dutch Food Analysis Institute, Zeist, the Netherlands has developed a scheme of analysing wines by computer. An atomic absorption spectrometer is used to work out the area of origin of the wine. In each wine-growing area, the soil contains a characteristic combination of trace elements which are also found in the grapes. The concentrations and combinations of the trace elements are grouped into information patterns or clusters or "fingerprints" of each area. These are fed into a computer and compared with the data obtained from individual wine samples. Thus the area of origin of the wine can be established.

The System reliably distinguished between Moselle and Rhine-Pfalz wines which are both made from the same variety of grape. This feature could be used to expose wines from cheaper producing areas that are sold as the more expensive varieties. A Silicon Valley Computer firm, Hewlett-Packard has already announced a diethylene glycol detection kit which registers concentrations as low as one part in 100,000. A computer library containing the necessary information on all the different types of wines known will take years to develop, since more than 600 different organic compounds are present in wine.
(Beverage and Food World, July/Septemer 1986, 55)

44 Computer to test freshness of fish

The Tasmanian Food Research unit, parts of the Australian Commonwealth Scientific and Industrial Research Organisation division of food research in Hobart (Australia), has introduced a system that grades fish according to its appearance and odour.

Judgements on various parts of the fish can be entered into a handheld personal computer, which then grades the product and places it into one of four categories. Prime, good, fair or poor.

An equation worked out by the food research unit described how temperature variation affected the shelf life of fish. Using test panels of up to 20 people, the unit correlated the information to prepare score sheets for grading and feeding into the computer. The manufacturer believe that there would be a ready market for the computer in Europe, where score sheets were already being used.
(Beverage and Food World, July/September 1986, 56)

45 Computer-controlled chromatogram evaluation

Camag, Switzerland have introduced the most sophisticated software available for evaluation of thin layer chromatogram. This software, in addition, also controls the TLC Scanner II. The software allows fully automatic scanning TLC plates, improves accuracy and reliability of results, helps development and validation of new methods, optimiser parameters of unknown chromatograms, aids identification of fractions by recording their UV spectra, evaluates the same chromatogram under up to 9 different wavelengths, scans in dual wavelength mode, corrects noise from structure of layer, corrects baselines automatically. Video integration possibility is built-in. For more information write to: Anchrom Enterprises, Anand Building, Charegaonkar Wadi, Mulund (East), Bombay 400 081.
(Chemical Products Finder, November 1986, 12)

46 Kit to test iodised salt

A simple field test to ensure that iodised salt contains the right mix of iodine and salt has been developed by scientists at the National Institute of Nutrition (NIN) here.

The kit, costing about Rs. 10, can be used for effective implementation of the programme for distribution of iodised salt to eradicate iodine deficiency disorder like goitre.

Field workers without any knowledge of chemistry can easily use the kit to monitor edible salt for iodine, particularly at the retail sales points, NIN scientists said.

The NIN kit consists of a distilled water container, a plastic plate with circular depressions, spoon, droppers, a standard salt containing iodine and a colour gradation chart for comparing the intensity of the colour.

When a simple test is conducted with a prepared reagent the standard iodised salt desired for the programme to control goitre turns blue immediately before turning grey. The kit has the provision for a 50 ml reagent that can test nearly 500 samples, the scientists said.
(Deccan Herald, 4 February 1987, 6)

COMMERCIAL INTELLIGENCE

PRODUCTION (RAW MATERIAL)

47 State-wise estimate for 1984-85 (Final)

Area: in hectares Production: tonnes

	CORIANDER		ONION	
	Area	Prodn.	Area	Prodn.
Andhra Pradesh	1,42,000	38,500	14,100	1,12,600
Assam	-	-	4,963	11,049
Bihar	3,840	2,152	15,033	1,26,676
Gujarat	-	-	14,90	4,91,100
Haryana	233	112	2,716	34,508
Himachal Pradesh	-	-	635	978
Jammu & Kashmir	-	-	445	977
Karnataka	22,412	3,406	42,159	2,43,299
Kerala	-	-	366	2,709
Madhya Pradesh	46,594	12,596	13,695	1,90,719
Maharashtra	-	-	51,100	7,12,800
Nagaland	-	-	120	400
Orissa	17,805	10,039	43,153	3,41,541
Punjab	-	-	1,000	15,200
Rajasthan	1,01,782	29,382	13,095	46,541
Tamil Nadu	57,510	22,180	26,440	2,29,090
Tripura	-	-	120	135
Uttar Pradesh	6,020	3,040	26,484	4,19,199
Delhi	-	-	178	1,313
Pondicherry	-	-	6	72
All-India	3,98,196	1,21,407	2,70,708	29,80,906

(Agricultural Situation in India, September 1986, 509-515)

48 State-wise estimates of area and production, of Tapioca and Tur 1984-85 (Final)

	TAPIOCA		TUR	
	Prodn.	Area	Prodn.	Area
Andhra Pradesh	13,800	65,900	2,42,700	57,000
Assam	2,153	9,830	9,943	7,174
Bihar	–	–	77,176	94,307
Gujarat	–	–	3,28,800	2,51,100
Haryana	–	–	21,430	15,532
Himachal Pradesh	–	–	–	–
Jammu & kashmir	–	–	–	–
Karnataka	1,400	14,291	3,79,584	1,87,539
Kerala	2,32,753	39,52,514	225	142
Madhya Pradesh	–	–	5,04,400	4,07,600
Maharashtra	–	–	7,58,100	4,85,200
Meghalaya	3,836	21,482	1,542	1,372
Nagaland	420	1,650	–	–
Orissa	–	–	1,18,208	92,881
Punjab	–	–	42,200	45,600
Rajasthan	322	615	40,752	22,634
Sikkim	–	–	–	–
Tamil Nadu	47,820	14,77,010	1,35,430	87,320
Tripura	338	1,609	–	–
Uttar Pradesh	–	–	5,22,208	8,81,955
West Bengal	–	–	10,556	8,292
Andaman & Nicobar Island	192	1,482	–	–
Arunachal Pradesh	4,252	14,882	–	–
Dadra & Nagar Haveli	–	–	1,744	1,046
Delhi	–	–	638	235
Mizoram	10	65	–	–
Pondicherry	695	12,156	–	–
All-India	3,07,991	55,73,486	31,96,110	26,47,149

(Agricultural Situation in India, September 1986, 500-503, 515-6, October 1986, 590-592)

49 State-wise estimates of area and production of banana, 1984-85 (Final)

	Area (Hectares)	Production (Tonnes)
Andhra Pradesh	23,150	3,89,500
Assam	31,286	4,06,046
Bihar	9,285	47,784
Gujarat	12,400	6,65,500
Karnataka	19,771	1,15,272
Kerala	49,569	3,15,897
Madhya Pradesh	12,276	2,17,943
Maharashtra	48,300	11,44,200
Manipur	3,100	21,000
Meghalaya	3,829	47,655
Orissa	18,142	1,80,500
Tamil Nadu	39,270	11,79,380
Uttar Pradesh	674	9,518
Andaman & Nicobar Islands	1,288	14,792
Arunachal Pradesh	500	1,400
Lakshadweep	114	2,430
Mizoram	1,416	4,506
Pondicherry	149	2,725
All-India	2,77,919	47,84,648

(Agricultural Situation in India, September 1986, 506-508)

PRODUCTION (INDUSTRIAL)

50 Sugar production

According to the Indian Sugar Mills Association, sugar production during the first fortnight of January, 1987 (i.e., 1.1.87 to 15.1.87) was about 8,00,000 tonnes as against 7,12,000 tonnes during the correspondence period last year. This brings the total production till 15.1.87 for the season 1986-87 to 20,03,000 tonnes as against 26,75,000 tonnes during the corresponding period last season.
(Indian Sugar Mills Association, Press Release, 10 February 1987)

51 World and India's production of processed foods

Qty: Lakh tonnes

Product-group	1982			1984		
	World	India	% share of India	World	India	% share of India
Meat & meat products	1,403 (13.7)	9.6 (12.6)	0.68	1,474 (13.8)	10.1 (12.0)	0.69
Dairy products and eggs	5,333 (52.1)	56.1 (73.8)	1.05	5,537 (51.7)	61.6 (73.1)	1.11
Fruit & Vegetable products	374 (3.6)	1.4 (1.8)	0.37	394 (3.7)	1.4 (1.6)	0.36
Other food products	3,128 (30.6)	8.9 (11.7)	0.28	3,299 (30.8)	11.2 (13.3)	0.34
Total	10,238 (100.0)	76.0 (100.0)	0.74	10,704 (100.0)	84.3 (100.0)	0.79

Note: Figures in brackets indicate percentage distribution of the product groups
(Foreign Trade Bulletin, December 1986, 7)

EXPORT

52 Cashew export earnings up

Cashew exports during September, 1986 totalled 3,26 tonnes, an increase of about 27 percent over the exports in the corresponding last year. Of this, 973 tonnes were to the United States, 758 tonnes to Singapore, 478 tonnes to the Netherlands, 399 tonnes to Soviet Union, 176 tonnes to Japan, 128 tonnes to Australia, 104 tonnes to West Germany and the balance to other countries.

The export earnings realised were Rs. 2099.7 million an increase of about 31 per cent over last year's earnings. This was due to higher unit export price for cashews in the current year. Nut prices in the international market were generally higher this time. The unit average export price for January to September 1986 was Rs. 75.99 per kg. as against Rs. 65.01 per kg last year.

During the review period, exports witnessed appreciable increase in the case of Netherlands, Singapore, Japan, Australia, United Arab Emirates, West Germany, New Zeland, Kuwait and Hong Kong. Exports on the other hand, were less to the United States, Soviet Union, United Kingdom, Canada and Saudi Arabia.
(Economic & Commercial News, 17(2), 1987, 3-4)

53 Export of processed foods

(Value: Rs. lakhs)

Item	1985-86	April-August 1985	April-August 1986	1986-87 (target)
Mango juice*	187	30	9	650
Other canned & bottled fruits	4,802	1,546	1,305	4,000
Canned vegetables	158	77	68	120
Dehydrated vegetables	137	18	83	180
Pickles & Chutney	544	275	151	750
Fresh meat	2,906	1,238	1,122	3,800
Frozen meat	4,207	1,565	1,769	5,200
Canned meat	282	122	124	600
Poultry products	36	9	6	300
Animal casings	194	87	52	200
Confectionery & sweetmeat	11	6	3	-
Biscuits	109	71	26	-
Guar gum	3,263	900	1,113	5,000
Non-alcoholic beverage basis	4	4	-	-
Alcoholic beverages	47	18	11	-
Malted milk	190	75	99	600
Ghee	193	78	110	500
Starch & its derivatives	90	63	40	
Papads	403	198	221	500
Cocoa products	23	7	-	-
Walnuts in shell	26	10	-	-
Walnut kernels	794	484	287	1,500
Mushrooms	416	200	563	500
Other processed foods	325	151	134	1,200
Fresh mangoes	1,637	1,131	1,050	1,650
Other fresh fruits	793	635	591	2,150
Fresh vegetables	1,651	753	780	2,700
Fresh onions	5,186	2,529	2,307	5,500
Fresh potatoes	6	4	Neg.	-
Grand total	28,620	12,284	12,024	37,600

*Consequence on qualitative change in the market, increased demand for pulps instead of juice.

(Foreign Trade Bulletin, November 1986 9)

54 Spice oils and oleoresins

There has been a steady increase in the exports of spice oils and oleoresins from India during the last ten years. Estimated production of spice oils in India is to the extent of about 30 tonnes and the production of spice oleoresins is estimated at 300 to 350 tonnes per annum.

The major countries importing spice oils and oleoresins from India are USA, UK. Canada, France, Japan, West Germany, Netherlands, Australia etc. There are no restrictions on export of these items from India.
(Beverage and Food World, July/September 1986, 58)

55 Rise in export duty of pepper to net Rs. 10 cr

The Lok Sabha today adopted a resolution increasing the export duty on black pepper from Rs. 3 per kg to Rs. 5 per kg.

The measure, the Minister of State for Finance, Mr.B.K.Gadhvi said, was expected to net an additional revenue of Rs. 10 crores annually.

Responding to the brief debate on the resolution, Mr.Gadhvi allayed apprehensions that the increase in export duty on pepper would adversely effect the small growers. The Government had studied this question in detail and was of the opinion that measure would not retard pepper cultivation or affect its exports.
(The Hindu, 10 December 1986, 6)

56 US tariff will affect cashew exports

The US government's reported decision to impose a 200 per cent import duty on cashew imported from certain coutries, when implemented, would seriously hit Indian cashew exports.

About 60 per cent of India's cashew exports are sent to the US. Brazil is also contributing its supplies of cashew nuts to the U.S. If the import duty is imposed only on imports from India, Brazil will capture the US market substantially.

The decision of the U.S. government is believed to be a measure to retaliate against those countries with which the U.S. is having an adverse balance of trade. India is one among them.

Trade circles maintain that the import duty on cashew is a retaliatory measure against India's decision to impose 200 per cent import duty on almonds, which is grown only in the U.S. Almond is a good substitute for cashew.

The U.S. government's decision has come at a time when Indian cashew is fetching a high premium in the international market owing to the scarcity of other nuts.

Trade observers fear that the US decision on cashew imports may in future be made applicable to India's export of pepper and spices and even marine products to the U.S.
(The Economic Times, 31 January 1987, 1)

57 Coffee export duty cut

The export duty on coffee has been reduced from Rs. 10,000 a tonne to Rs. 6,000 a tonne. This was announced by Prime Minister Rajiv Gandhi in Trichur today, according to agency reports. The reduction brings the duty back to earlier levels prevailing a few months ago.

Coffee exporters are disappointed over the reduction in the export duty on coffee to older levels.
(The Economic Times, 18 January 1987, 1)

58 Indian export consultant

An export consultancy service is offered to overseas buyers of Indian goods by: Mr.S.Sengupta, 178 Sarat Bose Road, Calcutta 700 029. He can obtain information to reliable suppliers and their financial status' reports on comparative pricing structures, quality control by recognised experts, and other relevant details. Mr.Sengupta already assists clients in Western Europe and hopes in this way to come in contact with Netherlands importers.
(Cordamom, January 1987, 19)

59 Interest rates on export credit cut

The Reserve Bank of India (RBI) has announced a sharp cut of 2.5 percentage points in the interest rates on export credit to boost the country's export efforts.

With effect from 1 August, 1986 the lending rate for pre-shipment credit upto 180 days stands reduced from 12 per cent to 9.5 per cent. The rate of interest on pre-shipment credit beyong 180 days and upto 270 days has come down from 14 percent to 11.5 per cent, and that on post-shipment credit upto 180 days from 12 per cent to 9.5 per cent.
(Cardamom, January 1987, 19)

IMPORT

60 Malawi-new import regulation

According to an announcement made by the Reserve Bank of Malawi, an approval granted to import goods would be valid for three months only. Any approval not utilised within three months shall be automatically cancelled.
(Cashew Bulletin, 23(12), 1986, 16)

61 25 p.c. import duty on pulses

The Union Government has imposed 25 per cent duty on import of all variety of pulses.

A notification to this effect was issued on February 4, 1987. According to importers, this is for the first time that import duty on pulses was imposed.

Trade circles here fear that this unexpected duty may lead to sudden rise in prices of pulses in the local market.

The yearly import of pulses is only two to three lakh tonnes, which accounts for only five per cent of total production of pulses in the country.

The importers who have already registered import contracts with NAFED are worried that they may incur huge losses as this imposition of duty came unexpectedly.
(Financial Express, 7 February 1987, 1)

TRADE INFORMATION

62 Asia and Pacific - Trade Information Centres

Afghanistan

Trade Information & Documentation Centre, Ministry of Commerce, Darulaman Rd., Kabul. Telex 34 COMSTRY AF

Australia

Agricultural & Multilateral Policy Div., Dept. of Trade, Kings Ave., Camberra Act 2600. Telex: AA 62193 94

Bangladesh

Int'l. Trade Organization Branch, Ministry of Commerce, Bangladesh Secretariat, Dhaka. Telex: 642201 FTD BJ

Trade Information Centre, Export Promotion Bureau, 122-124, Motijheel C/A, Dhaka 2, Telex: EPBB 642204 DJ

Bhutan

Trade Information Centre, Dept. of Trade & Commerce, P.O. Box 151, Thimphu. Cable: BHUTRADE, THIMPHU

Brunei Durussalam

Economic Planning Unit, State Secretariat, Bandar Seri Begawan. Telex: BRUGOV BU 2209

Burma

Trade Information Service, Directorate of Trade, 228/240 Strand Rd., Rangoon. Telex: 21338 TRAPO

China

Trade Information Div., Int'l. Trade Research Institute, P.O. Box 45 Beijing. Telex: 22168 MFTPKCN

China Council for the Promotion of International Trade, Fu Xing Men Wai St., Beijing. Telex: 22315 CCPIT CN

China Int'l Economic Information Centre, JLA 20 Dong Huang Cheng. Gen North St., Beijing. Tel: 446331 Telex: 22559 COMPT CN.

Cook Islands

Dept of Trade, Labour & Transport, P.O. Box 61, Rarotonga. Telex: SECGOV 62006 RG

Federated States of Micronesia

Div. of Commerce & Industry, Dept. of Resources & Development, P.O.Box 490, Kolonia, Ponape 96941, The Fedrated States of Micronesia. Cable FSM GOVT. PONAPE

Fiji

Trade Information Centre, Economic Development Board of Fiji, P.O. Box 2303, Suva, Telex: 2355 EDBFJ

France

Dept. of External Relations, Centre, Francais du commerce exterieur, 10 Ave d'lena, 75783 Paris, Cedex 16. Telex: C.F.C.E.P. 611934 F

Guam

Economic Research Centre, Dept. of Commerce, 590 South Marine Dr., Tamuning, 96911. Telex: 6218 GOVGUAM GM

Hong Kong

Trade Enquiries Section, Hong Kong Trade Development Concil, Great Eagle Centre, 31/F, 23 Harbour Rd., Hong Kong. Telex: 73595 CONHK HX.

India

Trade Information & Statistics Div. Trade Development Authority, 16 Parliament St., New Delhi 110 001. Telex: 031-2735 AD EPT IN

Directorate General of Commercial Intelligence & Statistics 1 Council House St., Calcutta 700001. Cable: HUJUSMODI CALCUTTA.

Indian Institute of Foreign Trade, Ashok Bhawan, 93 Nehru Place. New Delhi 110 019. Cable: INDIFT.

Indonesia

Documentation & Publication Section, National Agency for Export Development, Jl. Gajah Mada No. 8, Jakarta. Telex: NAFED JKT 46279 DASLN/IA.

Dept of Trade, 5 Jl. M.I. Ridwan Rais, Jakarta.

Iran

Export Promotion Centre of Iran, P.O. Box 98-22 Tadjrish, Tehran, Telex: 212896

Japan

Information Service Dept., Japan External Trade Organization, 2-2-5 Toranomon, 2-chome, Minato-ku Tokyo 105, Cable: JAPANETRO TOKYO

Kiribati

Ministry of Trade, Industry & Labour, P.O. Box 69, Bairiki, Tarawa.

Lao People's Democratic Republic

Trade Information Service, Ministry of Commerce, Ave. That Luang, Vientiane.

Malaysia

Int'l Trade Div., Ministry of Trade & Industry Jl. Duta, Kuala Lumpur. Telex: DAGANGMA 30634

Malaysia Export Trade Centre, Wisma PKNS, Jl. Raja Laut, Kuala Lumpur. Telex: DAGANG MA 30634

Maldives

Trade Information Unit, State Trading Organization, Male.

Mongolia

Ministry of Trade & Procurement, Ulanbator.

Nepal

Foreign Trade Div., Ministry of Commerce & Supply, Kathmandu.

Trade Documentation & Counselling Unit Trade Promotion Centre, P.O. Box 825, Kathmandu. Cable: NIKASI, KATHMANDU.

Netherlands

Exportbevorderings-en Voorlichtings dienst (EVE), P.O. Box 20101, 2500 EE. The Hague. Telex: 31099

Centrum tot Bevordering van de Import uit Ontwikkelingslanden (CBI), P.O. Box 30009, 3001 Da Rotterdam, Telex: 27151

New Zealand

Asia & Pacific Section, Dept of Trade & Industry, Private Bag, Wellington. Telex: NZ 31530: Answer Back: TRADIND

Niue

Dept. of Economic Development, P.O. Box 42, Alofi.

Pakistan

Export Information & Advisory Centre, Export Promotion Bureau, 1.1 Chundrigar Rd., Karachi-1 Telex: 23877 EXPROM PK

Pupua New Guinea

Trade & Investment Promotion Branch, Dept. of Foreign Affairs & Trade, Post Office Wards Strip, Waigani.

Philippines

Trade Information and Assistance Office, Bureau of Foreign Trade, Ministry of Trade & Industry, Tordesillas St., Makati, Metro Manila, Telex: 40468 MTRADEPM

Republic of Korea

Overseas Research Dept., Korea Trade Promotion Corp., C.P.O. Box 1621 Seoul Telex: K 24265 KOTRA

Korean Traders Assn., 10-1, 2 ka Hoehyun-dong. Chung-ku, Seoul. Telex: K 24265 KORASO

Republic of Palau

Division of International Trade, Bureau of Foreign Affairs, P.O. Box 100, Koror, Republic of Palau.

Samoa

Western Samoa Trade Information Service, Dept. of Economic Development P.O. Box 862, Apia. Cable: 21 MALO SX

Western Samoa Trust Estates, P.O. Box 181, Apia.

Singapore

Trade Information Unit, Trade Development Board, World Trade Centre, Telok Blangah Rd., Singapore 0409. Telex: TRADEV RS 28170; TRADEV RS 28617

Solomon Islands

Solomon Islands Trade Information Service, Ministry of Trade, Commerce & Industry, P.O. Box G 10, Honiara. Telex; HQ 66311

Sri Lanka

Trade & Shipping Information Service, Ministry of Trade & Shipping, P.O. Box 1525, Colombo 3, Telex: 21245 TRADINF-CE

Export Development Board, 310, Galle Rd., Colombo 3, Telex 21457 EXDEV CE

Thailand

Trade Information Service Div., Dept. of Export Promotion, 22/77 Rajadamnern Klang Bangkok 10900. Telex: THC TH 82354

Trade Statistics Centre, Dept. of Business Economics, Ministry of Commerce, Rajadmern Kiang, Bangkok 10200. Telex: 72041 BUECO TH

Tonga

Ministry of Labour, Commerce & Industries, Nuku, Alofa. Telex: 66235 MINOFA TS

Tuvalu

Business Development Advisory Bureau, Vaiaku, Funafati Atoll.

United Kingdom

British Overseas Trade Board, 1 Victoria St., London SW1H 0ET, Telex: 8811074/5; Answer back:DTHQ G

United States of America

Office of the Pacific Basin, Int'l. Trade Administration, Dept. of Commerce, Washington, D.C. 20230

Vanuatu

Chamber of Commerce of Vanuatu, P.O. Box 189, Port Vila.

Viet Nam

Ministry of Foreign Trade, 31 Trang Tien St, Hanoi. Telex: 4264 VFI

Export Development Centre, 92-96 Nguyen Hue St., Ho Chi Minh City. Telex: 8223IMEX HCM

Research Institute for Foreign Trade Economy, 46 Ngo Quyen, Hanoi. Telex: 4265 VFI
(Spices News Letter, October 1986, 18-19)

63 Rice mills modernisation

Rice mills belonging to the three categories - battery of hullers, huller-cum-sheller, and sheller - were given two more years till July 31, 1988 for modernising their plants.

The Centre reviewed the progress of modernisation of three categories and decided to extend the deadline of July 31 last year by two more years, till July 31 next year, an official press release by the food and civil supplies ministry said.
(The Economic Times, 8 February 1987, 8)

64 No insistence on registration as SSI units for availing excise exemption and concessions

The Finance Ministry has clasified that for purposes of availing of central excise duty exemption and concessions for the Small Scale Sector, registration as Small Scale Industry units in the following categories is not insisted upon at present.

These are factories from which clearances during the preceding financial year (1985-86) did not exceed Rs. 7.5 lakhs and factories from which clearances during the current financial year are not likely to exceed Rs. 7.5 lakhs.

This benefit is also available to any manufacturer who has availed of any of the small scale exemption notifications issued during 1985-86, namely 166/72-Central Excises, dated July 13, 1972, 39/73-Central Excises, dated March 1, 1973, 158/77 Central Excises, dated June 18, 1977, 74/78-Central Excises, dated March 1, 1978, 70/81-Central Excises, dated March 25, 1981, 43/82-Central Excises, dated February 28, 1982, 44/82-Central Excises, dated February 28, 1982, 148/ 82-Central Excises, dated April 22, 1982, 77/83-Central Excises, dated March 1, 1983, 83/83-Central Excises, dated March 1, 1983, 77/85 -Central Excises, dated March 17, 1985 and 85/85-Central Excise, dated March 17, 1985.
(Laghu Udyog Samachar, September 1986, 15)

65 National income

The national income in the first year of the Seventh Plan (1985-86) rose by 5.1 per cent. According to quick estimates of national income and related aggregates for 1985-86 released today by the Central Statistical Organisation of the Planning Ministry, the total national income at constant prices was estimated at Rs. 60,143 crores against Rs. 57,243 crores in 1984-85.

This worked out to a 5.1 per cent rise compared to an increase of 3.5 per cent during 1984-85.

At current prices, the national income in 1985-86 was Rs. 195,707 crores as against Rs. 174,018 crores in 1984-85.

This increase of 12.5 per cent at current prices takes into account the implicit price-rise of about seven per cent during 1985-86.

Per capita income: the real per capita income for the year was estimated at Rs. 798 against Rs. 775 in 1984-85, a three per cent increase. At current prices, the per capita income worked out to Rs. 2,596 compared to Rs. 2,355 in 1984-85.

Net domestic saving in 1985-86 amounted to Rs. 37,585 crores, constituting 16.7 per cent of the Net Domestic Product. This was 16.9 per cent in the previous year.
(Deccan Herald, 17 January 1987, 1)

66 Expenditure on R&D touches one per cent of GNP

There are more women post-graduates and PhDs in research and development units in the country than men though women constitute only 5 per cent of the total personnel employed primarily for R&D.

For the first time the country's expenditure on research and development and science and technology related activity has reached the level of 1 per cent of the Gross National Product. Yet India's per capita expenditure on R&D activity averages to only $2.6 as against $ 100 to 400 in the developed countries.

These are some of the interesting and revealing statistics that have emerged from a national survey of about 2,000 science and technology institutions in the country, including the in-house R&D units in public and private sectors.

The survey, covers the data for the years 1982-83 through 1984-85. It shows that there has been overall growth in resources deployed for science and technological activity in the country in all the sectors. The survey was carried out by the Department of Science and Technology.

The findings reveal that as of 1 April, 1985, 2.22 lakh personnel were employed in the R&D institutions. Of these 35 per cent were primarily engaged in R&D activities, 33 per cent were performing auxiliary activities and the rest 32 per cent were providing administrative support.

Women constituted only 5 per cent of the personnel employed primarily in R&D. Of these women 15 per cent were PhDs, 36 per cent post-graduates, 26 per cent graduates, 12 per cent diploma holders and the balance were with other qualifications.

As against this in overall per centage terms 30 per cent of the personnel employed for R&D were graduates, 27 per cent post graduates and only 12 per cent were PhDs. An equal number were diploma holders and the rest 19 per cent with other qualifications.

How low the scientists are paid was obvious from the fact that only 1.7 per cent of the personnel in R&D activities were in the pay scales of Rs. 2000-2500 or higher. A high 85 per cent were in the pay scales of Rs. 1100-1600 or less and the balance of 23 per cent or so in the pay scale of Rs. 700-1200.

According to the survey data the total stock of economically active S&T manpower in the country was estimated at 25.61 lakh in 1985. This is expected to reach the level of 31 lakh in 1990. Whereas only 2.22 lakh personnel were in R&D institutions in the country as of April 1985.

During 1984-85 more than 87 per cent of the expenditure on science and technology and related activities was incurred by Government sources and the balance by the private sector. Of this Government expenditure nearly 89 per cent came from the Centre.

In 1984-85 the expenditure was Rs. 1890.58 crore, representing a 31 per cent increase over the previous year. The figure in 1985-86 was Rs.2180 crore.

Finally of the nearly one per cent of GNP spent on R&D and related S&T activity only 14 per cent was on basic research, 28 per cent on applied research, about 32 percent on experimental development and the balance on the other activities.
(PTI Science Service, 6(1), 1987, 7-8)

67 Discount rate reduced in Japan

The bank of Japan lowered the official discount rate to 3 per cent from 3.5 per cent effective from 1st November, 1986. This is the fourth half-point rate cut in 1986 after earlier ones in January, March and April.
(Cashew Bulletin, 23(12), 1986, 16)

FOOD REGULATION, QUALITY CONTROL AND HYGIENE

FOOD REGULATION

68 Peroxides affirmed as GRAS

FDA has affirmed that benzoyl peroxide is GRAS and hydrogen peroxide is GRAS with specific limitations. Details are in the Federal Register of July 30. For more information, contact C.L. Giannetta at FDA, 200 C St., S.W., Washington, Dc. 20204
9Food Technology, September 1986, 32)

69 Ban on additive

Sulfite ban, Labeling Regulation have been published by the Food and Drug Administration. The use of sulfiting agents - sulfur dioxide, sodium sulfite, sodium and potassium bisulfite, sodium and potassium metabisulfite - on raw fruits and vegetables has been totally banned. Packaged foods that contain any detectable levels of sulfite must contain a label declaration to that effect. A label statement is already required on many foods to which sulfite is added as a preservative (e.g., dried fruit, lemon juice, dried vegetables, and some canned vegetables). The new aspect is that after January 9, 1987, any processed food, such as some baked goods, that has been treated with sulfite at some stage must be labeled if any trace of sulfite is detectable in the final product. At present, analytical methodology for sulfite in the 1-10 ppm range is of questionable accuracy and sensitivity, but it is probable that this will change, and soda crackers that are presently "sulfite free" analytically may be found to have a few parts per billion sulfite in the future. Wine and some beers also contain sulfites. The Bureau of Alcohol, Tobacco, and Firearms has proposed that this be stated on the label, but no regulations have yet been issued on this topic.
(Cereal Foods World, October, 1986, 769)

70 Adulteration spreads as price rise

Adulteration of foodstuffs is on the rise, seemingly linked with the rising prices of commodities, according to recent surveys conducted by the Consumers Guidance Society of India (CGSI) in collaboration with the Bombay Municipal Corporation's health department and analysis centre reports UNI.

The latest test reports on various edible items, including oils, has shown that adulteration of groundnut oil, which had been on the decline in the late seventies and early eighties, has once again become popular with traders.

While only marginal adulteration showed in the yearly tests till 1985, last year alone nearly half the groundnut oil in the markets of Bombay and its suburbs that were subjected to the tests, had large quantities of cottonseed oil, palmolein and a mixture of cottonseed oil and castor oil.

Of the 112 samples of groundnut oil that were tested, 54 were adulterated - bringing the percentage level to as high as 47.4

While 32 samples showed the presence of cottonseed oil, 15 samples had palmolein and four had a mixture of cottonseed oil and castor oil.

Thus Bombay is a step ahead of Delhi in the adulteration of edible oils - only 30 per cent of the samples subjected to the tests in the capital had showed any impurities.

The CGSI Survey in Bombay showed that while the oils used in the adulteration of groundnut oil were much cheaper than the latter (Rs 12 against Rs 25 per kg of groundnut oil), consumers were sold the mixture at prices ranging from Rs. 15 to Rs. 25 a kg, thus being grossly cheated together with being subjected to health hazards.

While palmolein and cottonseed oil are not generally harmful, it is an established fact that costor oil is laxative and daily use of this will give rise to loose motions leading to continuous irritation of the intestines.
(The Economic Times, 13 January 1987, 6)

HYGIENE

71 Aseptic paint kills bacteria

Paints which not only inhibit bacterial growth but actually kill bacteria on the painted surface have been developed in Britain. Wallflex aseptic coatings are claimed to represent a breakthrough in fighting bacterial infection in hospitals, food-processing areas, kitchens, pharmaceutical-production areas, laboratories and air-conditioning systems. Offered in a wide range of colours, the product has a choice of gloss and eggshell finishes. It is resistant to abrasion and cracking conforms to the stringent British regulations regarding the surface spread of flame. It is nontoxic to humans in use and in the application process. For further information write to: Wallglaze Ltd., 62, Church Road, Aston, Birmingham B6 5TY, U.K.
(Industrial Products Finder, December 1986, 42)

72 Antimicrobial agent

Cyncal is available as an 80% liquid concentrate. Cyncal 80% is especially suited for use as a disinfectant sanitizer for use in food or beverage processing plants. It is an effctive disinfectant sanitizer on the hard surfaces found in meat processing. Cyncal is a blend of alkyl dimethyl benzyl ammonium chlorides, particularly notable for its high phenol coefficient and hard water tolerance. It may be used with synthetic detergents, but it is not compatible with soaps. For more information, write to Hilton-Davis Chemical Co., Commercial Development Dept., P.O. Box 37869, Cincinnati, OH 45222.
(Food Technology, July 1986, 154)

73 Ultraviolet sterilisers

Watreat Engineers have developed ultraviolet sterilisers for providing disinfected drinking water instantaneously. High

intensity ultraviolet lamps with reflectors provide a lethal dose of germicidal UV radiation across water and instantaneously destroy micro organisms. Indicating lamps are provided to give indication in case of power or lamp failures. Users are in hotels, clubs and restaurants, hospitals, schools, colleges and institutions; swimming pools; beverages, soft drink bottling units and food processing units; dairies; pharmaceuticals and poultries. For more information write to: Watreat Engineers, 21 Rocky Industrial Estate No.1, B. Patel Road, Goregaon (East) Bombay 400 063.
(Chemical Products Finder, November 1986, 67)

TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES

74 A.P. unit to make fruit-based beverages

A fruit based beverages plant is being set up by Arihant Agro Products at Kothur, a notified backward area in Andhra Pradesh. The factory with an initial capacity of 40.5 million units is expected to commence commercial production in March.

Promoted by a group of businessmen and young professionals with full support from Parle-India the company will manufacture and market fruit-based beverages under a franchise agreement with Parle Agro.
(The Hindu, 12 February 1987, 17)

75 Karnataka to set up Rs 7 cr tea project

The Karnataka government has decided to set-up a tea project in the joint sector, at a cost of Rs 7.55 crores in Kodagu district, Chief Minister Ramakrishna Hegde told pressmen here today.

He said the project was being taken up in the joint sector as the state government did not have the necessary expertise in this field. The government would invite offers from private entrepreneurs for the project proposed to be taken up over 800 hectares.
(The Economic Times, 13 January 1987, 3)

76 Milk powder unit in Karnataka

A Rs 9.8 crore factory to manufacture spray-dried coconut milk powder, stated to be the first of its kind in the country, will be set up in a joint sector at Tiptur in Karnataka, reports PTI.

The factory with a capacity to process 24 million coconuts annually, promoted by a non-resident Indian, has collaboration with the Karnataka State Coir Development Coporation, the factory executive director, Mr. C.Janardanan, told.

Mr.Janardanan also said the factory, expected to begin production in 1988, would export about 40 per cent of the spray-dried coconut milk powder to Europe and West Asian countries.

After the Philipines and Malaysia, India would be the third country in the world in process and market spray-dried coconut milk powder, he added.
(The Economic Times, 14 December 1986, 7)

77 Flavoured soya milk

The Rs. 12-crore ultra-modern plant to manufacture flavoured soya milk being set up at Mandideep near Bhopal by the Noble Soya House will go into production by end of this month. The product packed in disposable tetrapack cartons will be launched in stages at different places - beginning with Hyderabad, Pune and Bhopal in mid-February and Bombay and Delhi in Summer.

Disclosing this in an informal chat with Financial Express here on Friday, Mr.Shyam S. Sami, Vice-President (Marketing) of the company, said that it was proposed to cover the entire country with soya drink supply through the two lakh Godrej retail outlets. Noble Soya has been promoted by the Godrej and the Bhiwandiwallas of Great Eastern Shipping, Mr. Sami said.

Name and pack design for the soya milk have been submitted for necessary approvals and registration and the Union Government has granted excise exemption for the product while the Governments of Maharashtra and Madhya Pradesh had given sales-tax exemption, Mr.Sami said.

The Mandideep plant having a capacity 64,000 litres of milk per day was designed by Kibun, the Japanese soya giant having about 40 per cent of the soya milk market there and processing machinery imported from Alpha Lafal of Sweden and its subsidiary here, Vulcan Laval.
(Financial Express, 21 December 1986, 8)

78 Coconut water

A coconut complex is fast coming up at Chavakkad in Trichur district for bottling coconut water which is in great demand in the overseas markets, especially in the Gulf countries.

The Chavakkad complex, a co-operative venture of coconut growers will soon start export of pure coconut water in sealed bottles and cans to the Gulf.
(Beverage and Food World, October/December 1986, 45)

PERSONALIA

79 NRDC awards for inventions

Mr.Vellore Duraiswamy Venugopal of Vellore has been awareded Rs. 10,000 for the development of a new portable power ghani for the extraction of edible oils from oilseeds.
(Financial Express, 26 January 1987, 2)

RAW MATERIALS

176 Seedless black grape

Australian scientists have bred what they believe to be the world's largest seedless-black grape variety, to be known as "black opal seedless". The grape has been developed by scientists from the Australian Commonwealth Scientific and Industrial Research Organization (CSIRO) at its Division of Horticultural Research at Merbein, Victoria.

The new variety, Australia's first seedless black table grape, has been grown in commercial quantities for the first time this season.

There are a number of other much smaller black seedless grapes in the world, including a Chilean selection, but these only have commercial appeal once their fruit has been chemically treated to increase berry size.

One of the major advantages of black opal seedless is that it produces large berries without the use of gibberellic acid, which is a very expensive chemical widely used in the industry to increase the berry size of white and red seedless varieties.

With judicious trimming and thinning, black opal seedless produces an average berry diameter of 21.5 mm compared to the export standard for the largest black seeded varieties of 20 mm and the white and red seedless types of 16 mm.

It also has a very pleasant, sweet taste has shown good resistance to downy mildew, one of the major grapevine fungal diseases, and can be dried to produce an attractive raisin."

Black opal seedless is a cross between Carolina blackrose and ruby seedless.

(P.T.I. Science Service, 6(11), 1987, 25

STORAGE AND INFESTATION CONTROL

Nil

FOOD ADDITIVES

177 Chicken flavour made from vegetarian base

Gibbons Foods announces a new chicken flavour in an oil base, made entirely from vegetables. It has been successfully tested for use as a replace-

ment for chicken fat in dry soup bases and as a savoury flavour for cheese and spreads. There is no salt or cholesterol. Vegarine is suitable for ethnic foods and requires no special handling or storage. It is available in liquid or solid form in 12 kg pails. For further details contact: Gibbons Foods, 95 Advance Rd., Toronto M8Z 2T2.
(Food in Canada Sept. 1986, 56).

178 Fining agent for beer

Reddish Savilles Ltd, UK, offers a rapid beer-fining agent said to produce a clear, haze-free wort, with the advantages of longer filtration runs and extended beer shelf-life. Koppakleer is a copper (kettle) finings additive which clears beer by precipitating virtually all haze material from cold worts. It releases sediment in coldwort breaks by removing particles and soluble proteins and so reduces filtration time and costs. The agent is a pale buff-coloured powder, completely nontoxic and also available in tablet form. It is a blend of naturally occurring carrageenins extracted from red seaweeds. A consistent performance is ensured by strictly controlling the growth environment of the seaweed and its extraction and blending procedure. Every batch is claimed to be subject to quality-control checks for wort-trub formation. Koppakleer can be used as a smooth slurry in cold-brewing liquor when the temperature is less than 30 C. The slurry can then be added to the hot wort, either in the kettle or whirlpool. It can be added to the kettle during the final five minutes of boiling or to the whirlpool during the wort run-in. The product has the traditional benefit of producing a more consistent beer for racking and it will also maintain its performance even if boiling times are reduced. For further information write to: Pyrene Rai Ltd., Nirlon House, 254-B, Dr. Annie Besant Road, Bombay 400 025.
Industrial Products Finder February 1987, 59)

179 Milkless coffee whitener

Coffee whiteners have always been known to us as dairy products. As such a whitener without milk may seem unthinkable. However, it is possible to make it from vegetable oils as well. A Korean manufacturer has exactly achieved this.

Dong Suh Foods Corp, offers technology of manufacturing a powdered non-dairy creamer with vegetable oil for licensing. The product is claimed to have excellent solubility and improved shelf-life. It enhances the tastes of coffee products, and also can be added to tea and cocoa for richer flavour. It has also been locally economically accepted by the household consumers and institutional users.

Raw materials required are corn syrup solids, hydrogenated coconut oil, Na-caseinate, emulsifiers, dipotassium phosphate, food grade colour, etc. *(Asia-Pacific Tech Monitor Jan-Apr 1987, 11)*

PROCESSES

180 Improved gulabjamun mix powder developed

Scientists at National Dairy Research Institute, (NDRI) Karnal (Haryana) have developed a superior quality gulabjamun mix powder from skimmed milk powder, maida, suji, vegetable fat (butter fat optional), baking powder and cardamom flavour.

The cost of one kg of mix powder made with the formula works out to be Rs.17 as against commonly sold gulabjamun mix powders in market for Rs.50 to 70 per kg.

Technology for the new formulation of gulabjamun mix can be had from consultancy cell of NDRI to small entrepreneurs and dairy plants, which who may like to launch this product in national or international markets. *(P.T.I. Science Service 6(13) 1987, 4-5)*

181 Coconut cream technology

India, which ranks third in world coconut production, will soon begin commercial production of coconut cream.

India's annual coconut production is placed at 6800 million nuts, with 60 per cent going for food production, and 40 per cent for manufacture of copra for conversion into coconut oil.

After intensive research on a programme funded by the Cochin-based Coconut Development Board, the Regional Research Laboratory (RRL), Trivandrum, has perfected a technique for production of coconut cream.

According to Coconut Development Board sources here, the transfer of technology for processing of coconut cream is expected to begin soon to help initiate commercial production.

The process standardised in the RRL yields coconut cream as the main product and the residual grating as a byproduct.

According to the latest issue of Indian Coconut Journal, the official publication of the Coconut Devclopment Board, a commercial unit processing

10,000 nuts per eight-hour operation can produce 2500 kg of coconut cream and 500 kg residual grating. The residual grating could be used in making chutneys or curry powder.

Major equipment needed for production of coconut cream includes a hammer mill, a screw press for extraction, heat exchanger for pasteurisation, homogeniser for stabilisation of the emulsion, and a packing machine.

At the present level of production, 4000 million nuts are used in raw form for edible purposes. Even if 10 per cent of these are processed, one lakh tonnes of coconut cream worth Rs. 350 crore could be produced, the journal says.

(Deccan Herald 24 August 1987, 15)

182 New method of sugar production

An Indian sugar technologist has claimed to have developed a low cost completely manually controlled technique which helps in production "uniform high quality sugar crystals".

Mr. Mybur Anand who has designed and installed this new system called "Pan-Anant", at a sugar factory at Erode in Tamil Nadu calimed to be the first of its kind in the world, told PTI that the syrup and sugar nucleii enter at one end, massecuite with grown-up crystals and leave the pan at the other end continuously without distributing the vacuum.

Anant, meaning "without end" is the apt word for "continuous" and hence the Indian contipan is named "Pan-Anant", he said.

Mr. Anand, who headed a World Bank sponsored sugar project in Kenya and served as President of the South Indian Sugar Technologists' Association (SISTA) said, there have been a few models of continuous pans developed in recent years, particularly in the sophisticated best sugar industry in France and Germany. But there were very few in the cane sugar industry the world over and they have been used only to produce sub-standard sugar grades which are melted and reproduced as white sugar in batch pans, he said.

Pan-Anant is expected to cost half of Western models.

(Deccan Herald 16 June 1987, 6)

183 New method dissolves cholesterol

A method that dissolves 90% to 95% of the cholesterol from all meat, dairy and fat products without changing the consistency or taste has been discovered by researchers at the University of Wisconsin and the Massachusetts-based Phasex Corp.

Previously, reducing cholesterol in dairy foods substantially affected their taste, thus hindering market opportunities.

The process can be applied even to egg yolks after the shell is cracked. In the cheese market, the dissolving method is the only way to produce a natural, low cholesterol product, the report says.

While it has been successfully tested, the next one to two years will be spent refining the technique and the economics of implementing it on a large-scale basis. However, it could be available to manufacturers by as early as next year.

The dissolving method was first successfully tested in 1879 but was not rediscovered until recently.

(Food in Canada November/December 1986, 17)

184 Fruit juice enriched with calcium

Orange and grapefruit juice beverages containing as much calcium as milk have been introduced under the name Citrus Hill Plus Calcium by Procter & Gamble Co.

Clinical studies show the juice contains a type of calcium that is more readily absorbed by the body than calcium from other sources including milk and ordinary supplement pills, the company says. Unlike other forms, this type of calcium does not interfere with the body's absorption of iron. The juice also provides calcium without the high level of fat, cholesterol and sodium found in most dairy products.

It will be sold in concentrate and ready-to-serve forms, complementing the Citrus Hill Select orange juice line.

(Food in Canada November/December 1986, 17)

185 Juice sterilisation by steam injection

A method for direct product heating and cooling, especially suitable for fruit and vegetable juices and juice-containing drinks to extend their storage life, is described.

The process involves injection of saturated steam into the fruit concentrate with a temperature rise to about 100 C and with holding periods of a fraction of a second.

Cooling is effected by injection of sterilised water into the product stream which causes a very rapid temperature drop and simultaneously dilutes the product to the correct juice strength. The aroma concentrate is added into the cooled juice and the product is packaged aseptically.

It is concluded that low energy costs achieved by reduced initial product volumes (direct use of the concentrate) and low maintenance cost make the process very interesting economically.
(Soft Drinks March 1987, 101)

186 Gelatine product improves palatability of red wine

The product, Liquifine, has been developed by the Davis Gelatine (Australia) Company specifically for wine fining, the process of clarifying wine.

Gelatine not only has the potential to enhance visual characteristics of white wines and to impart a cleaner, more delicate flavour, but through its ability to remove astringent harsh tastes, it has been found to improve palatability of new red wines prepared for early consumption. This palatability factor has been acknowledged as especially advantageous in fortified wines.

Unlike ordinary gelatine, the new product remains in solution over long periods without setting to a gel on cooling, or losing its fining properties.

Other benefits include ease of preparing solutions for pre-fining tests, reliable duplication for laboratory results on a large scale, convenience of handling in the winery and ready dispersibility of the gelatine in the fining vessel.

The product is a clear, amber liquid manufactured by hydrolysis of gelatine in solution. It is selective for polyphenols and pectin, working on the charge interaction principle. The resulting wines are cleaner in taste, easier to drink and often exhibit clearer varietal character. The process enhances reactivity with polyphenolics and other colloidal haze-forming compounds. An added advantage is that loss from wines treated with the product is bio-degradable, minimizing disposal problems.

Research carried out during the development of the product also established that application to the crushed fruit as a pre-fining and juice extraction aid can result in the removal of certain precursors for harsh tastes and thus a softer tasting wine results. The addition of gelatine at this stage has also been shown to improve juice extraction, as well as contributing to the efficiency of clarification, whether by cold settling or centrifugation, often replacing the need for expensive enzymes. Inquiries: Davis Gelatine (Australia Co., Private Bag 12, PO Botany NSW 2019, Australia)
(Australian Trading News May-June 1987, 8)

187 Sun's rays to distill alcohol

Solar energy is the most ideally suited forms of renewable energy for any process requiring low temperature heat, Chiang Mai University of Thailand has come out with an idea to use solar energy for alcohol distillation.

The still is a low pressure fractional type, consisting of a 1.1m high fractionating column, a 25 litre boiler tank and a 1.4 sq.m. flat plate collector. The distillation process requires thermal energy in the temperature range of 50 to 80 C, either from the sun or other sources. Yield can be as high as 92 per cent (v/v). The raw materials are locally fermentable substances and solar energy available at no cost. Equipment/machinery is priced (FOB) at US$750 (excluding the rotary pump).

The technology is offered for licensing. It has been commercialised in Thailand in 1985.

(Asia-Pacific Tech. Monitor January-April, 1987, 13)

188 Freeze concentration without any loss of aroma

Grenco Process Technology B.V. has developed a freeze-concentration process. This process is used for concentration aqueous solutions, such as coffee extracts, beer, wine, milk, vinegar, orange juice and many other juices. The water is removed by freezing out the water and subsequently separating off the ice crystals from the concentrated liquid. The important features of the Grenco process are: no product or aroma losses; low operating temperatures; and completely enclosed equipment. With the development of multistep machines,it has been possible to considerably reduce the costs of dehydration. Dehydration rates of up to 16,000 kg per hour are possible. For further information write to: Grenco Process Technology B.V., NL-5201 AG's-Hertogenbosch, The Netherlands.

(Industrial Products Finder February 1987, 83).

189 Clove oil substitute

An economical substitute to the costlier clove oil has been developed at the Regional Research Laboratory, Jammu. They have synthesised a variety of basil which yields, on distillation, a clove like oil.

Basil is the common name for any of the aromatic plants in the genus 'ocimum' of the mint family. The leaves of the plant are used for food flavouring.

The new variety, named as "Clocimum," yields 0.4 per cent oil. Eugenol is its major constituent (70 to 75 percent) as compared to 85 per cent in clove oil. The average yield of the oil from the new variety of basil is estimated to be 120 kg from a hectare.

The clocimum eugenol is cheaper (Rs. 100 a kg) than its clove counterpart (Rs. 400 a kg) with almost the same aroma. Once abundantly available, vanillin and ethyl-vanillin can be manufactured from this basil on a large scale at lesser cost. At present eugenol and vanillin are being imported for use in flavouring, perfurmery and pharmaceutical industries.

Eugenol's modified compounds like isoeugenol and methyl-eugenol find application in perfumery. It is also a starting material for the synthesis of vanillin.

(P.T.I. Science Service 6(15), 1987, 7)

190 Essential oil process improved

Schmid-Hydro diffusion SA of Switzerland have developed a process for the production of essential oils, leading to savings in time, steam and cooling water. In the Schmidhydro dicuser, the steam is injected downward, in the logical sense of law of gravity. After its osmotic action on the vegetal cells, the steam immediately enters the cooling done where condensation takes place. Therefore, the still-head and the goose-neck are eliminated. The hydrodiffuser forsakes the cylindrical shape in favour of a parallel piped which reportedly allows for improved distribution of the loaded vegetal. The system works with steam at low pressure e.g. O, IOO bar at the steam inlet, which then spreads uniformly throughout the load, without causing condensation or excessive packing down of the vegetal. The cooling is assured by a powerful element integrated under the vegetal load. The condensate flows freely towards a large collector where total equilibrium with the atmospheric pressure is establishes, it is said. To discharge the exhausted vegetal from the Schmid hydrodiffuser it is sufficient to slide the basket draw along its rails and open the bottom grill. The load falls into a portable carrier for removal. For details write to: Mira Chemicals, 103/104 'B' Neelambuj, Shankar Lane, Kandivli, Bombay -400067.

(Laghu Udyog Samachar April 1987, 22)

191 Minced fish meat

The Central Institute of Fisheries Education (CIFE) has developed a technique of producing comminuted fish meat.

The process involving large varieties like Dome and cat fish begins with the removal of inedible portions like head, alimentary canal and fins. The vertebral column along with the rib case (right above the belly cavity) are also removed to avoid discolouration of the meat and prevent emission of a pungent odour when stored at low temperatures. The process also helps to prevent large pieces of bone being enmeshed to the rubber belt of the separator causing damage.

The fillet - longitudinal sectional piece, free from bones are then directly passed through the deboning machine. The comminuted meat collected thus is frozen within 3-4 hr after this process.

The comminuted fish meat can be packed in suitable lots of waxed paper cartons with an inner lining of polythene pouch. It can be stored at least for six months at -30 C (or three months -20 C) without loss of quality.

Comminuted fish meat lends itself to considerable modification of texture, flavour and appearance and to the addition of stabilisers and additives.
(PTI Science Service 6(10) 1987, 5-6)

192 Post-harvest technologies for oyster mushrooms

The Biotechnology Resource Centre (BRC), Bombay has developed appropriate post-harvest technologies for edible oyster mushrooms, *Pleurotus sajor-caju* and *P. ostreatus*.

The choice of both these species of oyster mushrooms rested on their capacity to withstand wide range of climatic fluctuations, temperature varying from 16 to 38 C (optimum 20-30 C). They also have good keeping quality at room temperature for two days.

The BRC has developed 15 Commercial Mushroom Farms in Maharashtra and as most of these are situated in the interior regions of the State, logistic problmes make transportation of fresh mushrooms to the city difficult.

BRC has developed several economical and simple post-harvest technologies to increase shelf-life. The cost of these processes is well within Rs.0.40 to 1.50 per kg.

The post-harvest technologies include dehydration - by sun-drying, oven drying and tray drying,-brine preservation and pickle making. Sun-drying and tray drying have been found to be very effective and the packed product can be preserved for more than five years. The pickle developed by BRC can also stay for more than two years.
(PTI Science Service 6(10), 1987, 5)

193 Milk beverage

An economical milk beverage made by the scientists of National Dairy Research Institute, Karnal, may soon become common man's cold drink with the increase in prices of soft drinks.

For 250 ml, the milk beverage costs Rs.1.50 as compared to 2.50 for a soft drink in Delhi and Rs.3.00 or more in other parts of the country.

This refreshing drink named as "Karna milk beverage" has been found tasteful. Made from diluted skimmed buffalo milk, it has slightly pungent taste as 1 to 1.5 per cent alcohol is added.

When it was distributed among people for their taste reaction, almost all of them liked its flavour.

In this process, the buffalo milk is diluted and subjected to heat treatment. It is inoculated with lactic starters. It is then incubated for the first stage of fermentation. Then it is taken out, its curd is broken, sweetening and flavouring agents are added. Bottles filled with this product are incubated for two days when the beverage develops gas and the typical flavour. Now it is ready for use.

The technology is being standardised for dairy industry to adopt it,

(PTI Science Service 6(10), 1987, 2-3)

194 Coffee oil used as solvent

Nestle's new method for the natural decaffeination of coffee uses coffee oil as a solvent. The exclusive process begins with specially selected green coffee beans which are moistened with water. The caffeine contained inside the beans is gradually released to the surface. Natural coffee bean oil, which has been removed from other roasted coffee beans, is then used to wash the beans. The oil absorbs 97% of the caffeine and carries it away without removing the natural coffee flavour. After the decaffeinated beans are dried, they are ready for roasting.

The new method for natural decaffeination responds to the growing demand for natural health foods. The average adult Canadian drinks approximately two cups of coffee a day and 18% are drinking decaffeinated coffee, the company notes.

(Food in Canada February 1987, 27)

195 Spray dried malt milk

A method of manufacture of spray dried malted milk powder has been standardised at Dairy Technology Division of NDRI, Karnal. Evaluation of various processing parameters have shown that the operating conditions found suitable were preheating temperature of 85 C for 10 min for milk and wort mixture, concentration of mix to 45% T.S. before spray drying. The spray drying produced had the average composition: moisture 2.5%; fat 7.8%; protein 13.97% and ash 4.16%. The product was observed to have a loose bulk density of 0.44 g/ml and packed bulk density of 0.66 g/ml, wetting time of 12.2 sec, dispersibility of 32.63 g flowability (angle of repose) 64.41 and solubility index 0.53 ml. Various physico-chemical and sensory changes taking place in the spray dried product packed in six different packaging materials and stored at 30 C were monitored over 12 months period. Quality attributes of powder packed in aluminium foil laminates were comparable to those of samples packed in metal cans and glass jars. Among flexible packaging materials metalized polyester and laminate of aluminium foil, paper-low density polyethylene were found to be suitable for packaging spray dried malted milk.

(Dairy Information Bulletin, 3(3), 1987, 3)

196 Bread in cans

Norges, Bremerhaven, FRG is launching a line of special breads that go through the baking process in the cans in which they are sold. The cans have ring pull-tops with plastic lids, and are offered in 220 and 500 g sizes. Six varieties are available including whole-grain and wheat bread. The breads do not contain preservatives and have a shelf life of two years.

(Food Engineering International February 1987, 12)

197 Energy utilization of cooking

A house hold experiment was conducted at Sundapalayam village of Coimbatore district on different fuel utilization for cooking for one month. Four households each consisting of 5 members were selected for the study. The fuels selected are firewood, kerosene, biogas and indane and the assumed calorific values are 4300, 9100, 4700 and 10,900 KCal respectively. The findings are summarised as follows. Rs. 1.90 ± 0.06 is required for cooking daily menu, while Rs.2.80 ± 0.40 is required if firewood or kerosene is used. The duration of cooking is about 2½ hours for biogas or indane, while it takes 3½ hours for kerosene or firewood. The monthly cost will be Rs. 98, 73, 59 and 56 for firewood, kerosene, biogas and indane respectively. Biogas can replace rural fuel needs in view of the economics and status of technology.

Type of fuel	Time taken Hrs.	Min.	Weight of fuel/ day	Cost of fuel per day Rs.	Weight of fuel/ month	Cost of fuel per month Rs.
Firewood	3	35	3.970 kg	3.28	119.10 kg	98.40
Kerosene	3	28	0.850 lit	2.42	25.50 lit	72.60
Biogas	2	45	2.420 M^3	1.96	72.60 M^3	58.80
Indane	2	10	0.408 kg	1.85	12.24 kg	55.50

(TNAU News May 1987, 3)

BYPRODUCTS AND WASTE UTILIZATION

198 Gas from dairy and food waste

A biogas waste treatment system developed at Invermay Agricultural Centre can remove up to 95 per cent of pollutants from waste water discharged by dairy and food processing plants.

The upflow anaerobic sludge blanket produces 150 cubic metres of methane gas fuel a day and cuts previous treatment times, of 10 to 20 days, to about eight hours.

The gas can be used for heating, generating power, and when purified, in motor vehicles, energy scientist Dr.Tico Cohen said.

A scrubber, compressor, and high pressure storage facility can be added to the system to purify enough gas to fuel 15 to 20 cars daily.

Biogas is 70 per cent methane and 30 per cent carbon dioxide, and is produced by bacteria which break down waste without the need for oxygen. The bacteria in the system create a layer or 'blanket' of sludge in the 12 cubic metre digester tank.

A small, standardised waste water treatment system could be developed, which Dr. Cohen said allows low-cost installation at smaller food processing and dairy factory plants.

Research to produce a small unit and a treatment for cheese whey effluent is continuing at Invermay's centre for waste treatment and biogas technology.

Dr Cohen said the system was developed from a Dutch design and improved on previous processes which converted only relatively solid wastes such as manure, straw and silage.

Waste water flows in the bottom of the tank and is broken down as it circulates to the top of the tank, producing the biogas, which is collected in a funnel at the top of the tank before being piped out.

Bacterial activity results in granules which settle, keeping the bacteria in the digester.

A tank is being built as a demonstration model and will also be used for research by the Wellington-based Liquid Fuels Trust Board.
(Food Technology in New Zealand November 1986, 3)

199 Cheese from waste liquid whey

Whey, a byproduct formed during the manufacture of paneer is usually thrown away as waste. Now, food technologists at the Punjab Agricultural University, Ludhiana, have found a way to turn this waste liquid into an Italian-type cheese.

The cheese, called Ricotta, is soft, fresh and unripened when manufactured from whey, and costs much less than other cheeses.

The liquid whey itself is formed when paneer precipitates from a solution of milk containing a tiny amount of citric acid.

The whey thus obtained is first neutralised by adding a solution of calcium hydroxide and then blended with either cow or buffalo milk. This blended milk is heated directly in a stainless steel vessel to a temperature of about 95 C. A little bit of citric acid of one per cent concentration is added to the heated whey milk blend.

The mass obtained is then strained through a double layered muslin cloth.

The ricotta cheese is then pressed under weight to give it an appropriate shape. The cheese manufactured through this technique costs less than Rs. 13 a kilogram and if cow milk is used, the costs could go further down.
(PTI Science Service 6(15), 1987, 2-3)

PROCESSED PRODUCTS

Nil

EQUIPMENT AND MACHINERY

200 Spillage-free food elevators

Hygienic elevators for food industries, which not only avoid spillages and consequent loss but also offer several other advantages over conventional designs have been developed in Britain. The fully enclosed Pocket Elevators leave only the in-feed and discharge points open for transfer and can handle wet or dry whole, diced or sliced vegetables, fruits, liquids or powders at up to 12 T/h. Cleaning is simple, and stainless-steel construction and a white food-quality belt help to maintain high standards of hygiene. There is a wash-down facility and all machine parts are readily accessible with interlocked hinged covers giving access to belt and troughing sections. The small number of lightly moving parts ensure low energy consumption by a 1.5 kW motor. The units are also quieter in operation than bucket-type elevators. Elevating height and angle of inclination can be customised and machines of non-standard capacities also can be made to order. For further information write to: Bead Engineering Co Ltd., North Lynn Industrial Eastate, King's Lynn, Norfolk PE30 2JA, U.K.

(Industrial Products Finder July 1987, 124)

201 Electronic fruit sorting system

The French company MAF announces a new system for sorting fruit, one that will effectively replace the sorting tables that were used formerly, where the produce had to be sorted by hand. This new system uses the latest in electronics to sort fruit into three different classes. The coding of the quality of each fruit is carried out through a mere flick of a switch. For further information write to: MAF, B.P.112, F 820001 Montauban Cedex, France.

(Industrial Products Finder February 1987, 37)

202 Grain cleaning and grading machine

Sigma Planet Drum Separator from Damas Maskinfabrik A/S, Denmark, is well suited for cleaning and grading of grain, oilseed, maize, rice and other hard seeds in large quantities. It is available in eight different sizes with capacities ranging from 40 to 220 t per hour. Distinct advantages offered by this machine are: space saving, non-vibrating operation, environmental compatibility, quick screen changing, flexible connection, suitability

for humid material, self-cleaning effect, brush cleaning of grading screens, and easy operation. The efficiency of Sigma is rated at 99.8% purity, and between 91% and 95% germination, depending upon the contents of input material. For further information write to: Tara International, 56/7 Botawala Building, Bomanji Master Lane, Opp Kalbadevi Post Office, Bombay 400 002.
(Industrial Products Finder February 1987, 141)

203 Metal detection in wet products

A new metal detector, Tektamet 3, from Goring Kerr is claimed to be the first in the world to incorporate an autophasing technique to eliminate problems previously experienced in the detection of metal in foodstuffs and other products that are themselves electrically conductive.

Formerly detectors handling electrically conductive products had to be set manually each time the product changed. The new patented device gives automatic changeover of the detector when the product changes and compensates for any change in the setting due to drift.

The result is said to be faster changeover from one product to another and greater throughput, with no manual supervision. This gives the same efficiency to detection of contaminants in 'wet' products that has long been enjoyed by producers of dry foodstuffs using Tektamet 2, the only auto-phase system previously available, the manufacturer says.

It is expected to find applications in dairy products, bread, pickles, cooked meats, sandwiches, sausages and similar industries.

The new detector is set by passing two items through the search head. This adjusts the operating phase to give a fail signal only when metal contaminants are present and to ignore the product effect that previously gave false results.

The narrow detection zone is said to identify a contaminated product exactly and to signal the reject mechanism to remove only the one item from the conveyor, thus minimising waste.

Each unit is purpose designed for a given product range and normally constructed in aluminium or stainless steel as a single unit for easy handling and installation.

Controls are inaccessible to unauthorised personnel, and units are waterproofed. For further information contact: Noel P. Hunt Co (NZ) Ltd, Box 30741, Lower Hutt.
(Food Technology in New Zealand November 1986, 20)

204 A grain pearler for villagers

The flour of coarse cereals like sorghum and pearlmillet is found to have lower palatability. This is mainly due to its coloured outer bran which contains tannins.

The palatability of the flour could possibly be improved by a suitable pearling machine which removes a part of the bran and germ. Wheat can be pearled in this equipment and used to prepare better quality maida and suji. The pearler may also be used to remove hulls from pulses like pigeonpea, green gram and blackgram, and the pearled grains may be later conditioned with water to make split pulses (dhal).

To achieve pearling of different grains in a single machine, a versatile pearler has now been designed and developed at the Central Institute of Agricultural Engineering, Bhopal.

The equipment is made up of mild steel. It has 10 carborundum grinding wheels of 30 cm diameter. A gap of 2 cm is maintained between the wheels. Pearling takes place due to friction between the grains and the abrasive surface of the grinding wheels as well as between the grains: The machine is equipped with a centrifugal blower and a cyclone separator to remove the fines during operation.

The new grain pearler costs Rs. 5,000 (without motor) and can be easily fabricated even in a small workshop.

Specifications of the grain pearler:

Type	Electricity operated, batch type
Overall length	1150 mm
Overall width	800 mm
Overall height	1080 mm
Total weight	113 kg
Suitability for grains	Coarse cereals, wheat and pulses
Capacity	120-150 kg/hr
Power requirement	3.7 kw (5 hp) electric motor
Labour requirement	One
Cost (approx)	Rs.5,000 (without motor)
Cost of processing	Rs. 4-5/quintal of grain

(Invention Intelligence March-April 1987, 142)

205 Sieve stops blinding

Russell Finex Ltd is claiming a major breakthrough in sieving technology with its new Vibrasonic Sieve System.

According to the company, its new equipment solves the problem of mesh blinding, whereby powder particles lodge in the mesh and halt production.

By utilising top grade stainless steel meshes, along with the addition of high frequency ultrasonic vibration, effective screening can be carried out as fine as 40 microns.

The Vibrasonic Sieve System prevents blinding occurring and eliminates the need for such accessories as scrapers, brush gear and rubber balls, which can become a source of contamination when worn through with extensive usage.

The system can be tailored to meet specific line requirements and can include automatic feeding,oversize removal and product transfer to either a suitable container or the next process stage.
(Food FIPP 9(5), 1987, 11)

206 Microwave and infrared heating ovens

Inava Instruments International has introduced modular heating ovens using microwave and infrared heating technology for various types of individual heating applications. The heating systems offered are of patented designs. Uses are for various operations like preheating, heating, drying, curing, burning, fusing, bonding, melting, welding, softening, hardening, dehydrating, dehumidifying, special heat treatment and weather conditioning, in industries such as plastics, electronics, paint, paper, textile, tea, leather, food, pharmaceutical, wood, rubber, hotel, printing, ceramics and cables. For further information write to: Inava Instruments International, 94 Ratnajyot Industrial Estate, Iria Lane, Vile-Parle (West), Bombay 400 056.
(Industrial Products Finder April 1987, 110)

207 New solar cooker

University of Sydney researchers are believed to have developed a solar cooker that can match the performance of gas and electrical stoves. The new cooker can do practically anything a gas or electric stove does and, because it includes a small pressurised water vessel, can also heat water or power a refrigerator.

The system is the first really practical step towards providing a solar kitchen for developing countries. His tests have shown that the cooker can make two large family meals on sunny days and can easily be supplemented with conventional fuel on cloudy days.

Previous solar cookers proved unpopular for several reasons they could not store heat, often had to be placed outdoors, were slow to heat up, could be used only a few hours a day or needed frequent repositioning of the collector mechanism to follow the sun.

The new cooker has no moving parts, makes use of common materials, and can fry, bake, boil or steam food. Its hot plate can be placed indoors, and heat storage allows cooking after sundown. Development into a readily acceptable practical form was expected to take about one year, Dr. Mills said.
(University News 11 May 1987, 18)

208 Solar fruit drier

The Philippine Institute of Nutrition has developed a polythene solar drier for drying tropical fruits and marine products.

The fruits like mango, jackfruit, papaya and banana, when dried in the solar tent drier, as compared to direct sun drying, were found to produce a more appetizing colour and texture. Secondly, a 25 to 40 percent reduction in drying time was observed. By solar drying, it is claimed, a highly hygienic product could be obtained as environmental mould contamination and insect infestation were significantly minimized.

The solar drier has been found to reduce the drying time by 10 to 30 per cent in drying marine products as compared to direct sun-drying. A reduction of 40 per cent of salt resulted in the use of solar drier because of minimization of microbial contamination.
(Deccan Herald 8 June 1987, 15)

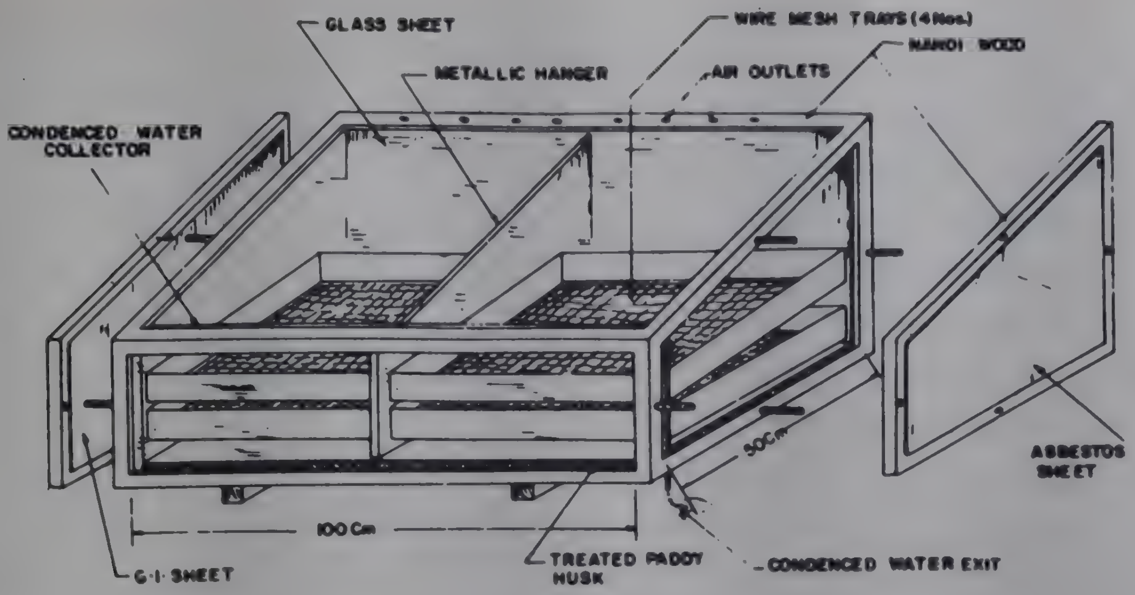
209 Solar fish dryer

Drying fish in the sun has been an ancient practice. But unfortunately this process takes a lot of time and does not reduce the water content in fish to extremely low values such as below 15 per cent.

Scientists at the National Institute of Oceanography (NIO), Goa, have designed a "marine-cum-farm produce solar dryer" that has provided to be an efficient solar fish dryer.

The model initially built by the NIO scientists is a rectangular box of specified dimensions and with an inclined glass cover. All except one of its side walls are insulated with rice husk.

Many holes are provided on the bottom and below the tap cover of the box to maintain air circulation inside its chambers. The dryer has been tested to record 90 C and 78 C as the maximum chamber temperatures during summer in the unloaded and loaded states respectively.


GLASS SHEET
WIRE MESH TRAYS (4 Nos.)
NANDI WOOD
METALLIC HANGER
AIR OUTLETS
CONDENCED WATER COLLECTOR
ASBESTOS SHEET
50 Cm
100 Cm
G·I· SHEET
TREATED PADDY HUSK
CONDENCED WATER EXIT

The gadget takes only about one fifth of the time otherwise required for open sun-drying.

The solar dried fish is fairly firm, hard, and free of salt crystals. It can handle about 25 kg of fish but, the capacity could be increased by the use of adjustable flakes.

All varieties of fish prior to drying by any technique must be dressed, washed, salted and cured since these processes reduce the moisture content by almost 50 per cent.

The cured fish could be solar dried to reduce the moisture content to about 27 per cent in about 16 hours of drying. The drying period during the summer would be further reduced.
(PTI Science Service 6(14), 1987, 5)

210 Cardamom dryer developed

A low cost cardamom dryer for drying 20 kg of small cardamom has been designed and developed by the Central Plantation Crops Research Institute. The dryer costs about Rs. 4,000/-.
(CPCRI Newsletter July-December 1986, 2)

211 Agitated vacuum type rotary driers

Multifab Engineers Pvt Ltd, manufacture a wide range of direct contact dryers. The range is agitated vacuum type rotary driers and is called Venuleth Dryers. It is particularly suitable for handling highly heat-sensitive materials, where the drying is carried out at a relatively low temperature. Made of a stationary horizontal jacketed drum with a rotating shaft having spiral blades connected to a suitable driving system, this specially designed vacuum dryer can handle slurry as well as cake as feed. While heat is transferred through the external jacket, the central shaft blade keeps the product in constant movement. Thus, the product along the wall is constantly replaced. This sweeping action attains higher heat-transfer coefficients between the drying material and the heated interior surfaces. Due to low speed of rotation no damage is caused to the product. Particle size of dried solids can be reduced if required with the shaft blade. Features of dryer include; clean and closed operation with no atmospheric contacts; minimum manpower requirement; possibility of solvent recovery; improved product quality due to low temperature drying; and can perform as a reactor for solid-gas reaction. Venuleth dryers can commonly used for chemicals, pharmaceutical products, food, dyestuffs, and allied industries, and are available in a wide range from 500 to 5,000 litres working capacity. For more details write to: New Multifab Engineers Pvt. Ltd., 225 Gala Complex, D Upadhyaya Marg, Mulund (West), Bombay 400 080. *(Chemical Products Finder, 5(11) 1987, 75)*

212 Extruder

A machine which extrudes fat to ensure that it has the right softness for the pastry product being prepared has been developed by a British Company (Pandet Ltd., Unit 10, The Oaks Industrial Estate, Coventry Road, Narborough, England LE9 5GF).

The texturiser/extruder accepts up to four 12.5 kg blocks at a time and is sequenced to extrude softened strips of the required size and weight until empty; it then resets itself to await the next load.

Softening is achieved by using a hydraulic ram to force the product through a restricting orifice or series of them, and it emerges from the machine in ribbon form via a shaped nozzle on to a take-off conveyor. The ribbon is then cut into predetermined lengths by a rolling cheesewire cutter. Extrusion by ram rather than by rotating screw was chosen to avoid breakdown of the structure of the fat or mixing air into it, something which can result in inferior quality.

The base frame of the machine contains a 30 gallon (136 litre) oil tank, two oil pumps each driven by a three hp (2.25 kw) electric motor and the necessary hydraulic and electric control gear. Mounted on the frame is a fabricated heavy gauge stainless-steel box which is fitted with a sliding piston and a sliding lid. A safety gate covers access to the box and, when it is removed, oil is dumped back into the oil tank, immobilising the machine. Independent control of speed and pressure is available on the hydraulic rams.

One of the many benefits of this machine is product consistency, since the weight of theextruded strip of fat remains constant within close limits. Another advantage is that floor space is not needed. There is also reduced wastage of fat, since less handling is needed. The machine, which is useful for pastry makers, weighs about a tonne and measures six x two x three ft (1.8 m x 600 mm x 915 mm).

(Laghu Udyog Samachar December 1986, 23)

213 Twin-screw cooker-extruder

A British company has developed a twin-screw cooker-extruder to save time and money. The machine operates continuously, with no need for any attention, barring accidents, until it is desired to change ingredients or end product. By this process, it is possible, for instance, to make cornflakes in a fraction of the time taken previously, it is claimed batch processing is replaced by the continuous process. The most important uses for this type of high-temperature high-speed cooking are in the cereal-processing industry, states the company, but other uses include baking, confectionery, animal foods, part-cooked snacks, soups, etc. Uses could also be found in other industries, including the production of medicines. For further information write to: Sale Tilney Technology PLC, Weybridge, Surrey KT15 2RH, U.K.

(Industrial Products Finder July 1987, 21)

214 Rotary leaf filter

Basp Industries manufactures self-cleaning and self-solids discharging pressure leaf filters identified as Basp Rotary Leaf Filter. This filtration equipment has a vertical vessel, housing a stack of filter leaves which are horizontally fixed on a central shaft, and a drive unit at the top. The filtration is carried out by pumping the feed. The liquid passes through the filter, leaves into the central (hollow) shaft and passes through the filtrate outlet. The solids/wet cake which is retained on the filter leaves can be washed (front washing),dried, and finally discharged through the discharge nozzle in the form of slurry, cake or dry powder, Basp rotary leaf filter is a totally closed equipment and need not be opened for washing or cake discharging. This ensures complete safety from atmospheric contacts. The main feature, besides self-cleaning, is the facility of cake discharge as wet or dry powder without opening the unit. Basp rotary leaf filter has a variety of filtration applications in the chemical, food processing and allied industries. For further

information write to: Basp Industries, G.P. Industries Compound, 96 Panch Pakhadi, P.O. Wagle Industrial Estate, Thane, Maharashtra 400 604.
(Industrial Products Finder July 1987, 25)

215 Laboratory fermenters

Chemap AG, Switzerland, has introduced a new generation of Chemap laboratory fermenters - the Series 3000. Due to its modular construction, a plant can be assembled to meet the special requirements of its user in every way. The drive unit and fermenter control module are separated and connected by flexible tubes which permits placing the two modules on different levels for optimal working comfort. All Chemap fermenters are automatically controlled and in situ sterilisable. The indirect heating prevents burning of the medium and allows sterilising the fermenter even without an external source of steam. The Series 3000 offers a wide range of reactor vessels from 3.5 to 35 litres in glass, stainless steel and steel/glass combined. Each one can be equipped with a variety of interchangeable stirring devices. The air-lift vessel, which is specially suited for cell culture, is available also as a conversion set. Computer connection for data logging and set value control is standard with all Chemap fermenters. For further information write to: Vulcan-Laval Limited, Dapodi, Pune, Maharashtra 411 012.
(Industrial Products Finder February 1987, 59)

216 Drinking water for everybody

Berkefeld-Filter Analagenbau GmbH, West Germany, has been offering Water Purification/Treatment Systems since 1980. The Berkefeld-Filter-Transit is a compact unit for the treatment of fresh surface water from lakes, rivers, streams, etc. into perfect drinking water conforming to WHO standards. This compact unit can be erected and set into operation in a short time wherever plenty of good quality drinking water is not available. It is especially suitable for operation in remote and somewhat inaccessible places. The water supply with this unit is also possible in housing estates and villages as well as on farms, solitary factories and building sites. For further information write to: Polymer Papers Ltd, Environment Division, 12/6 Mathura Road, Faridabad, Haryana 121 003.
(Industrial Products Finder February 1987,29)

217 Preventing air-borne contamination

The danger of reinfection with air-borne micro-organisms (moulds, bacteria and yeasts) of various fruit and vegetable juices during their storage and transport is pointed out and the use of sterile filters as preventative measures is dealt with (H. Beck Flussiges Obst, 1986, 53(8), 392, 4 PP).

It is contended that perishable goods can be stored under sterile conditions in the appropriate containers and safely transported; sterile air filters are integrated in the system and in conjunction with safety valves compensate for volume changes caused by temperature fluctuations, and allow sterile unloading.

The filters are particularly recommended for highly sensitive fruit and vegetable juices. Advantages claimed include simple handling, avoidance of chemicals foreign to the product, and protection against excessive heat effects. *(Soft Drinks March 1987,100-101)*

218 Sterilisation of food preserves in all types of packaging

Hermann Stock, Maschinenfabrik GmbH specialises in the production of batch-type high-pressure autoclaves with and without rotation for full-water and sprinkling circulation processes, with the choice of either direct or indirect heating/cooling. More than 3,000 autoclaves from Stock have already been supplied to more than 75 countries throughout the world. A new development is a modern computer control system for full-water pressure autoclaves: the Rotomatronic. This advanced microprocessor control system was specifically developed to meet the special requirements concerning safety and process accuracy as specified by the USDA-FDA authorities in the USA for the food industry. The Rotomatronic can store a vritually unlimited number of programs. The program and process log are printed out by means of a precise digital matrix printer. For further information write to: Hermann Stock Maschinenfabrik GmbH, Postfach 2611, D-2350 Neumunster, West Germany.
(Industrial Products Finder February 1987, 61)

219 Diaphragm valves for sterilization and germ-free processes

Gebr Muller, Apparatebau GmbH & Co KG manufactures a special range of valves for the pharmaceutical industry, the food industry and biotechnology. They permit control of all neutral and aggressive, liquid and gaseous media. They are 2/2-way metal straight-way valves, manually or externally controlled with a high throughput. Direct welding into the pipeline system is possible. The surface quality of the valve body is between 0.1 and 6.3 microns.Ra, depending on the requirements, and it is also available electrolytically polished. Sampling from the product stream (DN 15 to 18) is also possible via a

weld combination with valve body DN 8. For further information write to: Gebr. Muller Apparatebau GmbH & CO KG, Postfach 30, D-7118 Ingelfingen 2, West Germany.
(Industrial Products Finder February 1987, 46)

220 New hydraulic take-up for plate heat exchanger

Cherry-Burrell has introduced a unique new option for its Thermaflex plate heat exchanger, What usually took hours to manually perform can now be effortlessly completed in minutes utilizing Cherry-Burrell's hydraulic quick take-up device.

The use of cumbersome wrenches is eliminated. The workload of plant personnel is reduced and the traditional opening and closing requirements of the plate heat exchanger is simplified. Cherry-Burrell's plate heat exchanger can now be opened or closed in less than 15 minutes.

Cherry-Burrell's Thermaflex offers the highest heat transfer coefficient of any heat exchanger type; it is capable of regeneration well into the 90 percent range, which means dramatic savings in operating costs. The Thermosflask is available in sizes ranging from 1.8 to 5.9 square feet of heat exchange.

For more information contact Cherry-Burrell Corporation, P.O. Box 3000, Cedar Rapids, IA 52406.
(Food Production/Management July 1987, 21)

221 Reverse osmosis plants in containers

Raw waters with high salt contents such as brackish water or sea water can be converted to drinking water by reverse osmosis plants. Berkefeld reverse osmosis plants, installed as complete units in containers, allow the treatment to drinking water standard according to the recommendations of the WHO. Container plants are preferred for the supply of large building sites and small communities with drinking water and process water. They work most reliably in continuous operation and require hardly maintenance. These plants have the following advantages: no special assembly required, easy transportation simple operation, the operating personnel require no special qualifications, no problems regarding commissioning, no civil construction necessary at site. For more details write to: Polymer Papers Limited, Environment Division, 12/6 Mathura Road, Faridabad, Haryana 121 003.
(Chemical Products Finder 5(11) 1987, 4)

222 Pump systems for food industry

The Planetary Pump from Maso-Dickstoffpumpen GmbH has been on the market for some time now and is noted in particular, for its extremely gentle conveying of pumpable media. Even piece goods, such as strawberries, can be conveyed without any recognisable damage. The new Maso Sine Pump is of an entirely new concept. It is used for gentle transportation of low- and high-viscosity products. Pressures of up to 15 bar, even for conveying water, are possible. At present there are four models with a capacity of up to 100,000 l/hr covering almost every sector in the industry. Both the pump systems have been designed in such a way that even the non-technically minded can replace worn out parts without much trouble. For further information write to: Maso-Dickstoffpumpen GmbH, Postfach 160, D-7 101 Untergruppenbach, West Germany. *(Industrial Products Finder February 1987, 151)*

223 Valve position indicator switch for breweries

The Sigma valve position indicator switch is a new, magnetically operated unit developed specifically for pneumatically operated actuators with 90 degree movement. It provides remote indication of the actuator position and, consequently, indicates whether the valve is open or closed. Conditions in which the switches must operate are not ideal. The actuators are sited "outside", next to the hot/cold liquor tanks (a brewers term for the water used in the brewing operation), and "inside" on the glycol valves which effect a "crash cold" cooling operation. However, being fully encapsulated, the switches are well able to cope with the dirty, wet conditions and the extremes of temperature encountered. The Sigma valve position indicator comprises two magnetically operated switches in a common housing, the housing being mounted on the outside of the valve actuator. The switches are operated by two permanent magnets mounted on a rotating carrier. The carrier is attached to the operating shaft of the actuator and sits in a well, inside the unit housing, underneath a transparent cover. The aluminium housing is water, oil and dustproof to IEC 144 Class IP 68 and the operating temperature range is -18 C to +80 C. Sigma valve position indicator switches can be supplied with adaptor kits to fit a variety of different sizes and types of valve actuators. For further information write to: Sigma Limited, Spring Road, Letchworth, Bucks SG6 4AJ, U.K. *(Industrial Products Finder April 1987, 129)*

224 Sealing machine

Aermec impulse heat sealing machine is ideal for sealing products such

as Pepsi-Cola plastic tubes, certain shampoo and soft drink pouches and consumer goods packed in polypropylene, polyethylene and other plastic materials. It is available in manually and pneumatically operated types. The machine is equipped with an electronic timer with a time range of 0-7 seconds. It governs the impulse time and can be set according to the gauge of the material being sealed. The timing is indicated by a green neon lamp which goes off when impulse time ends. Along with the timer a transformer is provided which generates the heat impulse. The operation of the machine is simple. The material to be sealed is held between the jaws and the foot pedal is pressed. The green indicator neon signals the on and off of the heat impulse. On releasing the foot a finely finished leak proof seal is obtained. The time and amount of heat to be given can be precisely controlled with the help of time and heat control knobs provided on the generator box. This enables one to choose the right combination for any kind of sealing thickness required. Operating instructions and a set of spares are supplied with the machine. For further information write to: T. Alimahomed and Co., 144/46 Sarang Street, Bombay 400 003.
(Industrial Products Finder February 1987, 78)

225 Automatic powder filling machine

Auto-Fill Model P F 90 is a fully automatic machine for filling powder into cans or bottles. This machine can be provided with a single or twin filling head. The output with single head is 30/40 containers per minute and with twin head 60/80 containers per minute, depending upon the shape/size of containers and the quantities to be filled. The machine works on a no-container nofill system. A semi-automatic, augur type powder filling machine can also be made, in which the bottles/cans have to be fed manually. This machine can be set for the required quantity and its output is 20/25 bottles/cans per minute. These machines are best suited for filling tea, coffee, pharmaceutical and food products in powder form. For further information write to: Autopack Machines Pvt. Ltd., 101-C Poonam Chambers, 1st Floor, Dr. Annie Besant Road, Worli, Bombay 400 018.
(Industrial Products Finder July 1987, 199)

226 Liquid filling machines

Bombay Pharmaceutical Machinery manufactures liquid filling machines to fill liquids into bottles of different shapes. These are specially suited to industries like pharmaceutical cosmetics, foods and distilleries. The capacity

range is 5 ml to 1,000 ml. For more details write to: Bombay Pharmaceutical Machinery, 1 Amar Kunj, Pestom Sagar, Chembur, Bombay 400 089.
(Chemical Products Finder 5(11), 1987, 3)

227 Scrubber

Scrubber has been used in grain and soy processing plants, breweries, and flavour production units to provide high odour and particulate removal. The Catenary Grid Scrubber is a catenary-shaped grid fixed in a vertical column which forces uniform gas velocities over the full tower cross section. Scrubbing liquid fed into the column above the grid is whipped into a fluidized state of extreme turbulence where intense mass transfer takes place from gas to liquid. For more information, write to Chem Pro Division, Otta H. York Co., Inc., 42, Intervale Rd., P.O.Box 3100, Parsippany, NJ 07054-0918.
(Food Technology February 1987, 148)

PACKAGING

228 Shrinkwrapping Machine

This may be used with rigid glass, plastic, metal, or paperboard containers that require over-wrapping for distribution. Called the Bemis/EDL System 2000 D Automatic Shrinkwrapping Machine, the unit features automatic collating, tray erecting, and sleeve wrapping operations, as well as a shrink tunnel, all in continuous sequence. Most types of shrink-wrapping materials can be used with the shrink wrapper. Design features include fiber optic sensing, left or right-hand infeed, easy film loading, personal computer control, seal jaw temperature control with tension-free sealing, and an accurate film-feed mechanism. Easy changeover permits minimal downtime for different products and package sizes. The system can also shrink wrap irregularly-shaped trayless bottles and cans. For more information, write to Bemis Machinery Co., P.O. Box 19043, Green Bay, WI 54307.
(Food Technology February 1987, 147)

229 Wire bound boxes for apples

To save forests from further destruction, wirebound boxes are on their way as a substitute for wooden boxes currently used to pack apples and other fruits.

A substantial reduction in wood use can be achieved by switching over to wirebound boxes as they have a high strength to weight ratio compared to conventional nailed boxes.

Wirebound boxes have wooden frame or cleats with pace boards or slats made of thin veneer, rasawn wood, which are reinforced by steel wires stapled to the faces and cleats.

Developed by the Forest Research Institute in Dehradun, the wirebound boxes can be stored or transported in flat condition and can be opened or closed easily several times as required in the present practice of marketing apples.

At present much of the wood is being extracted from the Himalayan belt of Jammu and Kashmir, Himachal Pradesh and Uttar Pradesh for packing apples and other fruits. Depletion of the forests in these areas is threatening the ecological balance of the whole country. Therefore, a substitute for wood or atleast reducing its use for packing apples is unavoidable.

(PTI Science Service 1-15 May 1987, 5)

230 Retortable pouches for seafood

Flexible retortable pouches can successfully be used for the packaging of shelf-stable seafood entrees, the NFPA has concluded at the end of a two-year National Marine Fisheries service-funded project.

The report found that retort pouches were able to maintain the nutrients and quality of seafood products over an extended period of time. The species chosen for the project were Atlantic cod, white shrimp, sockeye salmon, tuna and Alaskan pollock.

Members wishing a copy of the report can contact Janet Dudek or Ed Elkins, at NFPA.

(Food in Canada January 1987, 14)

ANALYSIS

231 Feed, forage and food analyser

Trebor Industries, Inc, USA, offers a feed, forage and food analyser designed to measure nutritional properties of complex foods. Designated as the Trebor-70, it is a versatile near-infrared instrument. It measures up to 12 constituents per product; protein; moisture; oil/fat; crude fibre; ADF; heat damaged protein; Ca, Mg, pH; amino acids including lysine, methionine, threonine, tryptophan, serine, isoleucine, glycine, alanine, valine, proline, etc; and many others. Near-infrared instruments have become widely accepted in many industries. Trebor-70 measures in both reflectance and transmission. It provi-

des reflectance measurement of powdered products at every 1 nm between 1,100 and 2,500 nm. For high moisture products (eg, milk, meat, silage) as well as large granular products such as whole grains and snack foods, the instrument performs transmission measurements between 600 and 1,100 nm, also at every 1 nm. This full spectrum capability is directly converted into per cent by Trebor-70's powerful built-in computer. For further information write to: Tara International, 56/7 Botawala-Building, Bomanji Master Lane, Opp.Kalbadevi Post Office, Bombay 400 002.
(Industrial Products Finder February 1987, 11)

232 Microwave systems analyze components

Speed and accuracy are the features of two developments in microwave technology, the Kjel-FAST rapid Kjeldahl digestion system and the AVC-80 Moisture/Solids Analyzer.

The Kjel-FAST accelerates complete decomposition of a sample to ammonium acid sulphate to within 5 min. After the digestion, the Kjeldahl nitrogen is determined in 10 min. Applications include meat and grains.

The AVC-80 Moisture/Solids Analyzer determines the full range of moisture/solids content. As an add-on, the Fat/Oil Analysis System provides fat or oil determinations in 4-6 min. Both systems are used to maximize profitability during processing, for quality control and for raw materials analysis. For further information write to: CEM Corp., P.O. Box 9, Indian Trial, NC 28079.
(Food in Canada, January 1987, 69)

233 Kit to detect fruit spoilage

Defects in fresh fruit and vegetables may be quantitated using enzymatic test kits for determination of glycerol and acetic acid. Determining glycerol and acetic acid content can be correlated to the level of mold and rot present in a variety of fruits and vegetables. The kits require minimal equipment, time, and operator training. The methods are highly specific, accurate, precise, and easily allow batched sample analysis. For more information, write to Boehringer Mannheim Biochemicals, P.O. Box 50816, Indianapolis, IN 46250.
(Food Technology February 1987, 150)

234 Texture analyzer

This may be used to analyze and quantify such texture characteristics as gel strength, breaking point, hardness, softness, lumpiness, smoothness, rubberiness, toughness, creaminess, and spreadability. The texture analyzer

measures these characteristics by means of a probe which is pressed into or onto a product. Twenty-five different probes are available. Through penetration force, Textures such as hardness or toughness are evaluated. Through withdrawal force, texture qualities such as cohesion, adhesion, and tackiness are measured. The portable instrument, which is easy to learn to calibrate and operate, features a digital display which gives the load in grams. For further information write to : Voland Corp., P.O. Box 1002, Hawthorne, NY 10532.
(Food Technology March 1987, 118)

235 Rheotron viscometer

Rheological properties of food products may be measured using the Rheotron rotational viscometer and elastometer. The instrument may be used to measure the following properties: viscosity, viscosity of non-Newtonian fluids, shearing elasticity, dilatancy, yield value, thixotropy, rheopexy, transient effects, relaxation, and normal stress. Materials that are analyzed by the Rheotron viscometer may be in the form of solutions, suspensions, emulsions, jellies or pastes, and solids. In use, the unit's rotating surface (outside cylinder or plate) impresses a shear flow or an angular deformation onto the substance. The resulting torque is measured at the opposite surface (inside cylinder or cone). If cylinders are used, the Rheotron is a Couette-type instrument. The features of the instrument make it possible to affect normal viscosity measurements under changing shear conditions and to measure rheological short-time processes and viscoelastic effects such as shear modulus and relaxation time. A 14-p brochure describing the Rheotron Viscometer is available. For a copy, write to C.W. Brabender Instruments, Inc., P.O.Box 2127, S. Hackensack, N.J. 07606.
(Food Technology March 1987, 118)

COMMERCIAL INTELLIGENCE

PRODUCTION (RAW MATERIALS)

236 Production estimate of Arecanut, 1985-86

States/Union Territories	Area (000 ha)	Production (000 tonnes)
Andhra Pradesh	0.2	0.2
Assam	51.2	64.3
Gujarat	-	-
Himachal Pradesh	-	-
Karnataka	58.5	85.8
Kerala	56.8	50.3
Madhya Pradesh	-	-
Maharashtra	2.3	2.2
Meghalaya	6.6	6.3
Nagaland	-	-
Rajasthan	-	-
Sikkim	-	-
Tamil Nadu	4.3	3.4
Tripura	0.7	1.1
Uttar Pradesh	-	-
West Bengal	4.2	9.2
Andaman & Nicobar Islands	-	-
Arunachal Pradesh	-	-
Goa, Daman & Die	1.3	1.4
Mizoram	-	-
Pondicherry	-	-
ALL INDIA	186.5	224.2

(Agricultural Situation in India March 1987, 1035)

237 Production estimate of Tapioca, 1985-86

States/Union Territories	Area (000 hectares)	Production (000 tonnes)
Andhra Pradesh	12.3	79.4
Assam	2.3	9.4
Gujarat	-	-
Himachal Pradesh	--	-
Karnataka	1.4	13.8
Kerala	215.0	3463.3
Madhya Pradesh	-	-
Maharashtra	-	--
Meghalaya	3.8	21.5
Nagaland	0.5	2.0
Rajasthan	0.3	0.6
Sikkim	-	-
Tamil Nadu	29.2	862.7
Tripura	0.5	2.1
Uttar Pradesh	-	-
West Bengal	-	-
Andaman & Nicobar Islands	0.2	1.5
Arunachal Pradesh	3.6	9.1
Goa, Daman and Diu	-	-
Mizoram	0.3	0.7
Pondicherry	0.4	6.3
ALL INDIA	269.8	4472.4

(Agricultural Situation in India March 1987, 1036)

PRODUCTION (INDUSTRIAL)

238 Sugar production

According to the Indian Sugar Mills Association, the sugar production during the second fortnight of August, 1987 (i.e. 16.8.87 to 31.8.87) was about 0.20 lakh tonnes as against 0.25 lakh tonnes during the same fortnight last year. The closing stock of sugar as on 31.8.87 was 29.95 lakh tonnes indigenous sugar and 1.09

lakh tonnes of imported sugar at the ports as against 24.20 lakh tonnes of indigenous sugar and 1.29 lakh tonnes of imported sugar on the same date last season.
(Indian Sugar Mills Association, Press Release, 18th Sept. 1987)

EXPORTS

239 Exports of cashewnut from India (quantity in tonnes)

Countries	1986	1985
Australia	1,948	1,632
Canada	207	429
Federal Rep. of Germany	678	331
Hong Kong	713	628
Japan	2,894	2,141
Kuwait	276	238
Netherlands	5,983	4,415
New Zealand	249	229
Saudi Arabia	193	283
Singapore	4,611	757
U.K.	2,187	1,016
U.S.A.	11,565	17,960
U.S.S.R.	4,765	6,761
U.A.E.	1,017	559
TOTAL including to other countries	38,050	38,123

(Indian Cashew Journal 17(4),5)

240 Spice exports up

Spice exports increased by nearly 9,400 tonnes last year compared to 1985-86.

According to official figures released here on Wednesday 83,847 tonnes of spices, worth nearly Rs. 302 crore, were exported during 1986-87. This makes an increase of Rs. 9.50 crore over the previous year's figure.

Black pepper topped the list of exported spices, earning nearly Rs.224 crore, followed by turmeric (Rs.18.81 crore). In terms of quantity, turmeric registered a 117 per cent increase.
(Deccan Herald 24 May 1987, 15)

241 Cashew exports up

India's exports of cashew kernels showed a phenomenal increase of 115 per cent in the first quarter of 1987 over the same period in the previous year.

According to official sources here, exports of cashew kernels touched 6,933 tonnes in January-March this year as compared to 3,224 tonnes in the same quarter in 1986.

In value terms, the increase was from Rs.24.21 crore in the first quarter of last year to Rs.60.32 crore in January-March 1987.

The average unit export price this year also increased by 15.8 per cent to Rs.87 per kg, as against Rs.75.10 per kg in 1986.

Imports of raw cashewnuts increased substantially to 7,992 tonnes valued at Rs.12.34 crore in the first quarter of 1987 compared to only 3,157 tonnes valued at Rs. 3.56 crore in the same period of 1986.

(Deccan Herald 1 June 1987, 15)

242 Processed imported pulses export allowed

The government has allowed the export of processed pulses made only out of pulses imported under advance licensing scheme/passbook or by and approved 100 per cent export-oriented units as approved under OGL-3. In other words, this will be to the extent of fob value indicated in the license.

Export of pulses processed out of indigenous pulses however will not be permitted says a public notice issued today.

(The Economic Times 7 July 1987, 4)

243 Indo-FAO Project on fish exports

India's fish production has reached the level over 2.8 million tonnes and the targeted supply of fish by 1990 is 3.4 million tonnes. It has however, been estimated that the demand of fish would be about 5 million tonnes by the end of the Seventh Plan. It is believed that one of the surest ways of increasing fish production is greater exploitation of the fishery resources of the Indian Exclusive Economic Zone of about 2.02 million sq.kms. which could provide four to five million tonnes of marine fish per year. An additional harvest of about one million tonnes of fish is possible from the inner continental shelf which is the most productive zone. The entire deep sea and oceanic fishery resources also remained to be exploited.

The export of marine products from India achieved a phenomenal growth in the past few years with exports touching Rs.4000 million mark in 1986 and set to achieve the target of Rs.4280 million for 1986-87, the exports almost entirely consist of a single product - shrimp which was being exploited at the maximum sustainable yield level.

However, it is felt necessary to find ways and means for exporting other fishery products like squid, cuttle fish, tuna and a variety of other deep sea fishes.

(Economic and Commercial News 17(18), 1987, 8)

244 Mixed trend in agricultural exports

Rice

As against the 247.7 thousand tonnes valued at Rs.1691.9 million during 1985-86, India exported 245.1 thousand tonnes at a value of Rs.1929.4 million during 1985-86. The increase of 14 percent in terms of value was on account of 15.3 per cent in unit value realisation. In spite of a 17.8 per cent increase in unit value realisation there was a decline of 21.4 percent in terms of value during the first nine months of 1986-87 as compared to the corresponding period of the previous year on account of a 33.3 percent decline in terms of quantity. Export of basmati rice is allowed under OGL subject to minimum export price and compulsory preshipment inspection. Export of non-basmati rice has been allowed within a limited ceiling subject to minimum export price.

Oil cakes

Exports under this head include extractions of groundnuts, cotton seed, rice bran, soyabean etc. Exports of oil cakes during 1985-86 declined to 665.1 thousand tonnes valued at Rs. 1235.4 million from 828.9 thousand tonnes valued at Rs.1369.2 million in 1984-85. The exports of oil cakes had been declining in recent years on account of declining demand in international market, high domestic cost and also due to quality issues which have affected the oil meals, primarily groundnut and cotton seed extractions. The declining trend has, however, been reversed during the current financial year due to measure taken by the Government including the grant of C.C.S. at 10 percent of F.O.B. value on oil meal w.e.f. 1.4.86. As against 363.3 thousand tonnes of oilcakes valued at Rs.632.3 million during April-December, 1985, India's exports increased to 742.4 thousand tonnes valued at Rs. 1282.5 million in the first nine months of 1986-87.

245 Export duty on coffee reduced

The Union Government has reduced the export duty on coffee from Rs.330 to Rs.170 a quintal with effect from May 19, according to a Coffee Board press release issued here today.
(Deccan Herald 23 May 1987, 14)

IMPORTS

246 3-year capital goods revamp scheme

Special loans carrying interest of 11.5 per cent per annum and permission to import specified capital goods at a reduced 35 per cent duty are to be given to selected capital goods industries for the next three years.

The Finance Minister, Mr.N.D.Tiwari, announced in both Houses of Parliament today details of the special programme of technology upgradation for selected capital goods industries as a follow-up of the proposals contained in the 1987-88 budget.

The scheme would cover existing as well as new production units in the following capital goods sector.

Mr. Tiwari said the objective of the programme was to induct the latest technology in these sectors, improve indigenous research and development facilities and reduce costs. The present scheme would be operative for a period of three years, up to the end of the Seventh Plan. Thereafter, another set of industries in the capital goods sector would be taken up for technological upgradation.

The Finance Minister announced details of the assistance to be given by Industrial Development Bank of India (IDBI) and other financial institutions under the technology upgradation scheme (TUS).

Among the industrial machinery food processing machinery is also included.
(Financial Express 14 August 1987, 1)

247 United States imports

(Quantity in metric tons)

Commodity	1986	1985	1984
Anise seed	838	968	860
Caraway	3690	3598	3973
Cardamom	133	203	80
Cassia	11642	10931	10814
Celery seed	2576	2549	2175
Cinnamon	953	1484	2744
Cloves	1045	1123	1054
Coriander	2588	2073	2471
Cumin	3642	3942	4400
Dill	752	449	741
Fennel	2230	1608	1986
Ginger	1810	1993	2007
Mace	173	289	217
Mustard	41292	39839	37242
Nutmeg	1822	2117	1973
Paprika	6376	8649	6680
Pepper, black	37844	27429	34505
Pepper, white	3475	4763	3643
Red pepper	6527	6191	6088
Turmeric	1944	2101	1789

(Source: Report from A.A. Sayia & Company Inc., Hoboken, N.J. 07030, USA)
(Spices Newsletter May 1987, 21)

248 Import regulations of prepacked foodstuffs in Tunisia

Tunisian authorities have specified the following labelling requirements as obligatory for foodstuffs imported into the country:

- product name;
- contents expressed in metric measurements;
- composition:complete list of ingredients, including additives;
- country of origin;
- name and address of manufacturers;
- expiry date; day, month and year must be indicated except for goods with a shelf life of more than three months, in which case month and year are sufficient;

- optimum storage date; for goods which do not have a definite expiry period, the words 'Best before' with the date should be stated, or alternatively the formula 'Use within.... after the date of fabrication indicating day, month and year;
- date of fabrication, indicating day, month and year;
- batch number, except for canned fruit, vegetables and fish;
- storage conditions, if necessary;
- method of use, if necessary;
- Labelling must be clearly written in indelible ink or by embossing, and be in Arabic, French, or English. Goods which are more than half way through their maximum utilization period may not be permitted entry into Tunisia.

(Cardamom June 1987, 19)

249 Advice against importing dairy products

A joint mission of the European Economic Community and the World Bank which visited India in July-August 1986, has advised India against the import of dairy products. The mission was in India to review Operation Flood II and to make an appraisal of the new Operation Flood III.

The mission has argued that because of a growing stock of indigenous dairy products, import of dairy products either subsidised or commercial, could retard the development of the dairy industry in India.

The mission has also suggested that target groups, for whom milk is considered indispensable, but who cannot buy milk because market prices are too high, should be given subsidised milk.

(Business India 4-17 May 1987, 14)

TRADE INFORMATION

250 Industrial licences and Letters of intent issued in May

Scheduled Industry No.28; Vegetable Oil & Vanaspati

IPINIT Vanaspati Private Limited, Rajabagicha, Cuttack (NU) Orissa: Jagatpur Cuttack Orissa; Vanaspati: 15,000 Tns.

Letters of intent

Scheduled Industry No. 26; Fermentation Industries

Nasik Dist. Coop Sparkling Wine and Bye Products, Bank Street, Pimpalgaon (Baswant) Dist. Nasik, Maharashtra; (NU): Teh. Dindori Dist. Nasik Maharashtra:

1. Sparking Wine 2. Still wine Dry and Sweet 3. Red Wine 4. Pink Wine 5. Other Grape Wines: 1 Million bottles (750 ml).

Scheduled Industry No. 27: Food Processing Industries

Sri Sitarama Annapura Sea Foods Ltd Amdalacalasa Srikakulam Dist. Andhra Pradesh (NU): Visakhapatnam,Andhra Pradesh: All varieties of fish: 1,300 Tns.

V. Malik A.V. Fisheries P. Ltd.,A-79, Naraina Indl. Area, Phase-II, New Delhi (NU): Visakhapatnam,Andhra Pradesh: All varieties of fish: 1,152 Tns.

Moby Dick Sea Foods Ltd., Plot No. 306, Road No. 25 Jubilee Hills, Hyderabad-34 (NU): Visakhapatnam: All varieties of Fish: 1,200 Tns.

Spar Marine (P) Ltd. 12&13, Block II,Lal Bahadur Stadium,Hyderabad-4 (NU) Visakhapatnam,Andhra Pradesh: All varieties of fish: 270 Tns.

Pandian Fisheries Private Limited,No.1, Govindan Street,Ayyavoo Colony Aminjikarai,Madras-600 029 Tamil Nadu (NU) Malpe Dist. North Kanara,Karnataka Tuna, Tuna like fishes and sharks 900 Tns.

Scheduled Industry No.28: Veg. Oils and Vanaspati.

Rajfed Mustard Project 4. Bhawani Singh Road Jaipur, Rajasthan (NA) Teh. Sriganganagar,Dist. Ganganagar, Rajasthan Rape/Seed/Mustard seed oil 30,000 Tns in terms of rape seed/mustard seeds).

A.V. Thomas Indl. Products Ltd.,22, Marshalls Road,Egmore, Madras-8 Tamil Nadu (NA) Chichkede Teh. Pandhurna Dist. Chhindwara,Madhya Pradesh, Refined edible vegetable oil 15,000 Tns. Soap stock acid 600 Tns.

Collaborations:

Sparkle Foods (P) Ltd. 404, Grand Canyon, 87, Pali Hill Road, Bandra, Bombay: S.A. Spontin NV Belgium: Bottled Mineral Water; Technical.

Accelerated Freeze Drying Co Ltd.,4/136, Ezhupunna P.O.,Kerala. Nissin Foods Co Ltd., Hong Kong, Freeze Dried Products: Financial.

Asian Can Ltd.,A-6, Neeti Bagh, New Delhi; Mardon Illingworth Ltd., U.K.: OTS Cans: Technical.

Casco Nairan (India) Ltd., P.B.No.232, Ram Bagh Muzaffarnagar: Casco Investment Ltd., U.K. Food Processing extruded snacks etc: Financial.
(Financial Express 12 August 1987, 9).

251 Wheat products exports allowed

The Government has decided to allow the export of wheat products, namely maida, suji and wholmeal atta (wheat flour of not less than 95 per cent extraction) within a limited ceiling on first come, first served basis without any minimum export price.

The exporters are required to file a copy of their bill of lading and invoice as passed by the port licensing authority with the Agricultural and Processed Food Export Development Authority within 15 days of the shipment.
(Financial Express 10 June 1987,1)

252 Certificate of registration a must for Export of Spices

As per the Spices Board Act, 1986, no exporter can export spices without a certificate obtained from the Spices Board. For commencing or carrying on business of export of any spice, the exporter has to obtain a certificate of registration by applying to the Spices Board in the prescribed form. However, a person carrying on the business of export of spices immediately before the commencement of the Spices Board Act, 1986, i.e. 26th February 1987, may continue to do so for a period of three months from such commencement if he has made and application for the certificate within the said period of three months till the disposal of such application. For further details and application forms, the intending exporters may contact: The Director (Spices), Spices Board, K.C. Avenue, St. Vincent Cross Road, Ernakulam, Cochin-682 018.
(Cardamom May 1987, 3) .

253 Benefit to exporters

Exporters of 25 specified products will now be eligible for release of foreign exchange upto a maximum of 10 percent of their annual export earnings repatriated to India for purposes of export promotion abroad under the new blanket exchange permit scheme recently announced by the Reserve Bank of India (RBI).

These products, identified on the basis of their potentiality for export promotion and high value addition are tea bags, packet tea and instant tea, processed foods (meat and marine products, spices in consumer packs), value-added coffee, processed fruits, cotton fabrics and made-ups, cigarettes, natural silk, textiles, handicrafts, coir products, jute manufacturers, man-made textiles, woollen textiles, basic chemicals, chemicals and pharmaceuticals, chemicals and allied products (including tyres), plastic and linoleum products, engineering goods,electronic goods, readymade garments, other processed foods, shrimps, fabricated mica and mica products, sports goods and consultancy services.

The new scheme has been advised in pursuance of the approval in principle by the Cabinet Committee on exports last year that the trade may be allowed to utilise five percent to 10 percent of their foreign exchange earnings on export promotion.

The maximum amount of foreign exchange for which exporters are eligible under the new scheme is considerably higher than the foreign exchange entitlements under the earlier schemes.

The new schemes are also more broad-based and flexible both as to eligibility of exporters and the purposes for which foreign exchange can be drawn by holders of blanket permits.

A number of additional items have been included in the list of approved purposes for which foreign exchange can be drawn so that holders of such permits are not required to apply frequently to RBI for release of foreign exchange for export purposes.

Under the scheme, an amount not exceeding two percent of the f.o.b. value of annual export earnings will be allowed in the case of 16 products on a discretionary basis.

The products are: oil cakes, cereals (other than consumer packet basmati), raw cotton, leather and semi-processed leather, gems and diamonds barytes, iron ore, chrome ore, manganese ore, coal, bauxite, all other minerals, castor oil, opium, psyllium husks and seeds and sandal-wood oil.

Export products not covered by either of the two above groups will ordinarily be eligible for issue of foreign exchange upto five percent of the f.o.b. value of their annual export realisation.

The quantum of exchange to be released to exporters whose export products fall under more than one category will be determined by RBI on the basis of the ceiling indicated for different products.

The blanket permits that may be issued to an exporter initially will be subject to a monetary ceiling of Rs. 20 million.

However, exporters who are eligible to draw higher amounts on the basis of the qualifying percentages laid down for different product groups may apply to RBI for issue of supplementary blanket permits within the overall permissible ceiling, if the amount of the initial blanket permit issued to them is fully utilised within less than one year.
(Economic and Commercial News 17(28), 1987, 5-6)

254 Registration with the Processed Food Export Authority

The newly-formed Agricultural and Processed Food Products Export Development Authority will be the registering agency for exporters.

A public notice issued by the Chief Controller of imports and exports issued on June 16, however, stated that all the registration-cum-membership. certificates already issued by the Processed Food Export Promotion Council, New Delhi, will remain valid upto four years from the date of issue. After that date, the processed food exporters will have to get themselves registered with the authority.

(The Economic Times 19 June 1987, 6)

255 Licensing norms revised for milk products units

The Union Government has decided to revise the licensing norms governing the milk products and malted foods manufacturing industry by according priority to the establishment of further capacity in the cooperative and public sectors and by tightening the licensing norms of private sector units operating in this industry. Simultaneously, a decision on broad-banding the licences for manufacture of 10 types of milk products has been taken by regrouping all these items under the broad heading of "all milk products, except infant milk food (baby food)" for the purpose of the Industries (Development and Regulation) Act.

(Commerce June 27-July 3, 1987,4)

256 Sugar production touches new high

Sugar production during the current season 1986-87 so far has touched a new record. As in May 1987, it was 8.04 million tonnes as against the previous high of 7.74 million tonnes on the corresponding month in the season 1982-83. The number of factories in operation as was 91 as compared to 32 on the corresponding date last season.

The monthly production during the current season was always generally higher, as compared to the monthly production during the last three seasons.

It may be recalled that the country witnessed the record sugar production of 8.43 million tonnes in the season 1981-82 and 8.23 million tonnes in the season 1982-83. The sugar production during the current season is expected to easily surpass 18.2 million tonnes mark. During the season 1985-86, it was 7 million tonnes and in the season 1984-85, 6.14 million tonnes.

An interesting feature of the current season's production is that the production in Uttar Pradesh has surpassed the production in Maharashtra after about a decade. It stood at 2.47 million tonnes on May 15 whereas the production in Maharashtra was 2.45 million tonnes.

(Economic and Commercial News 20 June 1987, 10)

257 Use of alcohol during the alcohol year 1985-87 (December-November)

(Quantity in lakh litres)

State	Quantity	Potable use	Industrial use
Andhra Pradesh	552.46	370.45	124.91
Assam	11.58	9.06	2.46
Bihar	175.80	112.47	44.15
Gujarat	327.44	Nil	301.57
Himachal Pradesh	15.79	13.38	0.02
J and K	24.37	20.01	0.32
Haryana	147.48	111.83	4.45
Kerala	112.66	102.45	0.66
Karnataka	447.50	311.00	129.10
Maharashtra	1680.19	484.22	769.97
Orissa	22.30	14.61	4.09
Punjab	154.97	119.74	12.55
Rajasthan	150.33	131.83	11.13
Madhya Pradesh	166.07	152.87	3.68
Tamil Nadu	819.86	611.65	89.59
West Bengal	268.50	65.01	200.32
Uttar Pradesh	1493.87	679.80	433.50

(Source: Central Molasses Board).

(Financial Express 26 June 1987)

258 India top rice bran oil producer

India has emerged as the largest producer of rice bran oil in the world with a sustained increase in production. Rice bran oil production totalled 2.55 lakh tonnes in 1986-87, as against 2.17 lakh tonnes in 1985-86.

What is heartening is that the production of edible grade rice bran oil rose sharply from 32,834 tonnes to 94,866 tonnes during the same period. Judging by the present pace of production in edible grade rice bran oil a level of 1.50 to 1.60 lakh tonnes may be reached during the current year.

The improved performance is mainly due to the assiduous efforts of the processing industry, which has been in response to the encouragement given by the government in the latest budget by way of a substantial rebate of Rs. 6,500 per tonne in excise duty for use of edible grade rice bran oil in vanaspati production. This was apart from other measures taken for upgrading the quality and quantity of raw parboiled rice bran.

The installed capacity of the solvent extraction industry exceeds 10 million tonnes but the capacity utilisation does not exceed four million tonnes in view of the non-availability of raw materials.
(The Times of India 9 June 1987, 11)

259 Items reserved for manufacture in the small scale sector

Development of small scale industries has been one of the significant features of industrial development in the country. Government have initiated several measures for providing institutional support and services at the central and state levels for accelerating development of small industries all over the country particularly in the backward areas. One of the measures of policy support for promoting small scale industries is the policy of reservation of economically viable and technically viable items for exclusive manufacture in the small scale sector. Policy of reservation was initiated in 1967 primarily as a promotional and protective measure vis-a-vis the large scale sector. The IDR Act was amended in March 1984 empowering Government to reserve items for small scale sectors with a view to determine the nature of any article or class of articles that may be reserved for production by small scale or ancillary industrial undertakings, Government has constituted an advisory committee under the act. This committee meets at periodical intervals and recommends to the Government items to be added to and/or deleated from the reserved list. Reservation/De-reservation of items for manufacture in the small scale sector is thus a continuing process.

Sl.No.	Product Code	Name of the Product
		Food and Allied Industries
1.	201801	Ice cream
2.	202501	Pickles & Chutneys
3.	202901	Vinegar
4.	204200	Rice Milling
5.	204300	Dal Milling
6.	205101	Bread

contd.

contd.

Sl. No.	Product Code	Name of the Product
7.	20530101	Biscuits
8A.	20530102	Pastry
9.	20920101	Confectionery excluding Chocolates toffees & chewing gums
10.	21100101	Rapeseed Oil except solvent extracted
11.	21100102	Mustard Oil except solvent extracted
12.	21100103	Sesame oil except solvent extracted
13.	21100104	Groundnut oil except solvent extracted
14.	214302	Sweetened Cashewnut products
15.	21620101	Poultry food except in pellet form
16.	21920101	Ground and processed spices other than spice oil & oleoresin spices
16A	219502	Tapioca sago
16B	219504	Tapioca flour
16C	224302	Synthetic syrups

(Kaigarika Varthe April 1987, 6)

260 Lean meat preferred

Butchers must abandon the belief that red meat should be fatty to taste good if they are to benefit from increasing demand for lean cuts, meat scientist Dr. Barry Butler-Hogg says.

Questionnaires completed by 974 people during this year's Mystery Creek field days indicated similar lean meat preferences to survey respondents in Europe and the United States.

"The stumbling block to improving the public image of red meat is the belief among butchers that it must have a high fat content to have eating quality". Dr. Butler-Hogg says.

While there is a correlation between marbled fat levels and eating quality, Dr. Butler-Hogg says people are increasingly choosing leaner meat.

The meat group of the Ministry of Agriculture and Fisheries; Raukura Animal Research Station asked field days visitors for views on four sirloin steaks of differing fat content.

Young people had the greatest aversion to fatty cuts and urban people preferred leaner meat to a greater degree than those living on farms.

People who ate steak the least had the greatest aversion to fat and most people surveyed preferred steak at the leaner end of the P1 grade.

Dr. Butler-Hogg says a more specific grading system is required to cater for the demand for leaner meat, because the present scale is too arbitrary.

M Grade meat has a fat level of 0 to 1 millimetre, L grade 1 to 3 mm, P grade 4 to 12 mm, G grade 13 to 18 mm, T grade 19 to 24 mm, E grade more than 23 mm.

A system which increases by equal divisions of fatness would allow export buyers to specify what carcasses they want within each grade, D Butler-Hogg says.

Present visual assessment methods would not be satisfactory in determining that degree of carcass fat content, he says and equipment like the Hennessy electronic probe would have to be used to ensure accuracy.
(Food Technology in New Zealand November 1986, 5)

FOOD REGULATION, QUALITY CONTROL AND HYGIENE

FOOD REGULATION

261 Prevention of Food Adulteration (Second Amendment) Rules 1987

G.S.R.270(E) - Whereas certain draft rules further to amend the Prevention of Food Adultration Rules, 1955, were published as required by sub-section (i) of section 23 of Prevention of Food Adulteration Act, 1954 (37 of 1954), with the notification of the Government of India in the Ministry of Health and Family Welfare (Department of Health) No.GSR 72(E) dated the 29th January, 1986, in the Gazette of India, Extraordinary Part -II section 3, sub-section (i) dated the 29th January, 1986, at pages 1 to 4 inviting objections and suggestions from all persons, likely to be affected thereby before the expiry of sixty days from the date on which copies of the Gazette in which the said Notification was published, were made available to the public;

And, whereas, the copies of the said Gazette were made available to the public on 29th January, 1986;

And, whereas, the objections and suggestions received from the public on the said draft rules have been considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sub-section (i) of section 23 of the said Act, the Central Government after consultation with the Central Committee for Food Standards hereby makes the following rules further to amend the Prevention of Food Adulteration Rules, 1955, namely:

RULES

1.(1) These rules may be called the Prevention of Food Adulteration (Second Amendment) Rules, 1987.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Prevention of Food Adulteration Rules, 1955, in rule 44, for the second proviso, the following proviso shall be substituted, namely:-

"Provided further that proprietary food articles relating to clause (i) shall be exempted from the operation of this rule".

(The Gazette of India Part II - Section 3 - Sub-section (i) No.101, 2 March 1987)

262 Prevention of Food Adulteration (Amendment) Rules 1987

G.S.R. 306(E)- The following draft of certain rules further to amend the Prevention of Food Adulteration Rules, 1955, which the Central Government proposes to make, in exercise of the powers conferred by sub-section (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954), and after consultation with the Central Committee for Food Standards, is hereby published as required by sub-section 23 of the said Act, for information of all persons likely to be affected thereby; and notice is hereby given that said draft rules will be taken into consideration on or after the expiry of a period of forty-five days from the date on which the copies of Gazette of India in which this notification is published are made available to the public.

Any objections or suggestions which may be received from any person with respect to the said draft rules before the expiry of the period so specified, will be considered by Central Government.

DRAFT RULES

1.(1) These rules may be called the Prevention of Food Adulteration (Amendment) Rules, 1987.

(2) They shall come into force on the date of their final publication in the Official Gazette.

2. In the Prevention of Food Adulteration Rules, 1955,--

in Appendix B,-

(a) item A.15 shall be omitted;

(b) in item A.15.01 for sub-item (d), the following shall be substituted, namely:

"(d) Iodine not less than 30 ppm at the manufacturers level and not less than 15 ppm in distribution channel including retail level:

Provided that table iodised salt may contain aluminium silicate as an anticaking agent to a maximum extent of 2.0 per cent.

Provided further that the total matter insoluble in water in such cases shall not exceed 2.2 per cent and sodium chloride content on dry basis shall nt be less than 97.0 per cent by weight."

(The Gazette of India Part II-Section 3-Sub-section(i), No.130, 26 March 1987)

263 Prevention of Food Adulteration (Amendment) Rules, 1987

G.S.R. 307(E) - The following draft of certain rules further to amend the Prevention of Food Adulteration Rules, 1955, which the Central Government proposes to make, in exercise of the powers conferred by sub-section (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954) and after consultation with the Central Committee for Food Standards, is hereby published as required by sub-section (1) of section 23 of the said Act for the information of all persons likely to be affected thereby; and notice is hereby given that the said draft rules will be taken into consideration on or after the expiry of a period of sixty days from the date of which the copies of the Gazette of India in which this notification is published are made available to the public.

Any objections or suggestions which may be received from any person with respect to the said rules before the expiry of the period so specified will be considered by the Central Government.

DRAFT RULES

1. These rules may be called the Prevention of Food Adulteration (Amendment) Rules, 1987.

2. In clause (v) of sub-rule (5) of Rule 49 of the Prevention of Food Adulteration Rules, 1955, the following shall be inserted at the end, namely:

"(e) IS:11434-1985 (Specification for enomer Resins in contact with foodstuffs)".

(The Gezette of India Part II-Section 3 - Sub-section (i) No.131, 26 March 1987)

264 Prevention of Food Adulteration (Amendment) Rules 1987.

G.S.R.308(E) - The following draft of rules further to amend the Prevention of Food Adulteration Rules, 1955 which the Central Government proposes to make, in exercise of the powers, conferred by sub-section (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954) and after consultation with the Central Committee for Food Standards, is hereby published as required by sub-section (1) of section 23 of the said Act for the information of all persons likely to be affected thereby; and notice is hereby given that the said draft will be taken into consideration on or after the expiry of a period of sixty days from the date on which the copies of the Gazette of India in which this notification is published are made available to the public;

Any objection or suggestion, which may be received from any person with respect to the said draft rules before the expiry of the aforesaid period will be considered by the Central Government.

Objections or suggestions, if any, may be addressed to the Secretary, Ministry of Health and Family Welfare, Nirman Bhavan, New Delhi-110011.

DRAFT RULES

1. The rules may be called the Prevention of Food Adulteration (Amendment) Rules, 1987.

2. In the Prevention of Food Adulteration Rules, 1955,--

(i) in rule 49, after sub-rule (16) the following sub-rules shall be inserted, namely:-

"(17) No person shall sell mineral oil (food grade) for use in confectionery except under Indian Standards Institution Certification Mark.

(18) No person shall sell confectionery weighing more than 500 gms, except in packed condition and confectionery sold in pieces shall be kept in glass or other suitable containers.

Explanation - For the purpose of sub-rules (17) and (18) "Confectionery" shall mean sugar boiled confectionery, lozenges and chewing gum and bubble gum".

(ii) In Appendix 'B' , item 25,--

(a) for item A.25.01, the following item shall be substituted, namely:-

"A.25.01-Sugar boiled confectionery whether sold as hard boiled sugar confectionery or pan goods confectionery or toffee or milk toffee or modified toffee or lacto-bon-bon or by any other name shall mean a processed composite food article made from sugar with or without doctoring agents such as liquid glucose cream of tartar, either by boiling or by process of panning or both. It may contain centre filing, or otherwise, which may be in the form of liquid semisolid or solids with or without coating of sugar or chocolate or both. It may also contain any of the following:

(i) sweetening agents such as sugar, invert sugar, jaggery, lactose, gur, bura sugar khandsari, sorbital, honey.
(ii) milk and milk products;
(iii) edible molasses,
(iv) malt extracts;
(v) edible starches;
(vi) edible oils and fats;
(vii) edible common salt;
(viii) fruit and fruit products and nut and nut products;
(ix) tea, coffee, chocolate, cocoa.
(x) vitamins and minerals,
(xi) shellac (food grade) not exceeding 0.4 per cent by weight, bee wax (food grade), paraffin wax, (food grade), carnauba wax (food grade) and other food grade wax or any combination thereof;
(xii) edible desiccated coconut;
(xiii) spices and condiments and their extracts;
(xiv) enzymes;
(xv) enzymes;
(xvi) glycerine (food grade),
(xvii) sodium bicarbonate;
(xviii) Lubricants such as calcium, magnesium or sodium salts of stearic acid, talc (not exceeding 0.2 per cent), icing sugar, or liquid paraffins (food grade) (known as mineral oil); stearic acid (from grade);
(xix) permitted anti-oxidants.
(xx) gelatine (food grade);
(xxi) permitted stabilizing and emulsifying agents;
(xxii) permitted flavouring agents;
(xxiii) acidulants, such as citric acid, tartaric acid, malic acid (food grade);
(xxiv) jellifying agent;
(xv) permitted preservatives;
(xvi) edible foodgrains;
(xvii) calcium bicarbonate, calcium carbonate;

(xviii) baking powder;
(xix) gulkand, gulabanafsha, mulathi;
(xx) puffed rice;
(xxi) chinagrass;
(xxii) eucalyptus oil, camphor, menthol oil crystals, pepper mint oil.
(xxiii) thymole, edible seeds.

It shall not contain artificial sweeteners.

Mineral oil (foodgrade) if used as a lubricant, shall not exceed the limit of 0.2 per cent by weight. It shall also conform the following standards, namely:

(i) Ash sulphated (on salt free basis) .. Not more than 2.5 per cent by weight

Provided that in case of sugar boiled confectionery where spices are used as centre filling the ash sulphate shall not be more than 3 per cent by weight;

(ii) Ash insoluble (indilute hydrochloric acid) Note more than 0.2 per cent by weight.

Provided that in case of sugar boiled confectionery where spices are used as centre filling the ash insoluble in dilute Hydrochloric acid shall not be more than 0.5 per cent.

Where the sugar boiled confectionery is sold under the name of milk toffee and butter toffee, it shall conform to the following additional requirements as shown against each:-

(1) Milk toffee-
  (i) Total protein (NX6.25) shall not be less than 3 per cent by weight on dry basis;
  (ii) Fat content shall not be less than 4 per cent by weight on dry basis.

(2) Butter toffee - fat content shall not be less than 4 per cent by weight on dry basis.

It may contain sulphur dioxide in concentration not exceeding 350 parts per million":

(b) item A.25.02, shall be omitted.

(c) for item A 25.03, the following item shall be substituted, namely:-

"A.25.02 lozenges: Lozenges shall mean confections made mainly out of pulverised, sugar, or icing sugar with binding materials such as edible gums, edible gelatine, liquid glucose or dextrin and generally made from cold mixing which does not require primary boiling or cooking of the ingredients. It may contain any of the following--

(i) sweetening agents such as dextrose, dextrose-mono hydrate, honey, glucose, invert sugar, sugar, jaggery, bura sugar, khandsari sorbitol;

(ii) milk and milk products;

(iii) nuts and nut products;

(iv) malt syrup;

(v) edible starches;

(vi) edible common salt;

(vii) ginger powder or extracts;

(viii) cinnamon powder or extracts;

(ix) aniseed powder or extracts;

(x) caraway powder or extracts;

(xi) cardamom powder or extracts;

(xii) cocoa powder or extracts;

(xiii) proteins;

(xiv) coffee extracts or its flavour;

(xv) permitted flavouring agents;

(xvi) acidulants such as tartaric acid, malic acid and citric acid(food grade);

(xvii) permitted emulsifying and stabilising agents;

(xviii) vitamins and minerals;

(xix) sodium bi-carbonate;

(xx) Lubricants such as calcium, magnesium or sodium salts of stearic acid,talc (not exceeding 0.2 per cent). It shall not contain artificial sweeteners.

Mineral oil (food grade), if used as lubricant, shall not exceed the limit of 0.2 per cent by weight.

It shall also conform to the following standards;

(i) Sucrose content - Note less than 85.0 per cent by weight.

(ii) Ash sulphated - Not more than 3.0 per cent (salt free basis) by weight

(iii) Ash insoluble - Not more than 0.2 per cent by wt. dilute Hydrochloric acid.

It may contain sulphur dioxide in concentration not exceeding 350 parts per million."

(The Gazette of India part II-Section 3-Sub-section (i) No.132, 26 March 1987)

265 Prevention of Food Adulteration (Amendment) Rules, 1987

G.S.R. 345(E) - The following draft of certain rules further to amend the Prevention of Food Adulteration Rules, 1955, which the Central Government proposes to make in exercise of the powers conferred by sub-section (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954) and after consultation with the Central Committee for Food Standards, is hereby published, as required by the said sub-section for the information of all persons likely to be affected thereby; and notice is hereby given that the said draft rules will be taken into consideration after the expiry of ninety days from the date on which the copies of the Gazette in which this notification is published are made available to the public;

Any objection or suggestion, which may be received from any person with respect to the said draft rules before the expiry of the aforesaid period will be considered by the Central Government;

Objections or suggestions if any, may be addressed to the Secretary, Ministry of Health and Family Welfare, Deptt. of Health, Nirman Bhavan, New Delhi.

DRAFT RULES

1. These rules may be called the Prevention of Food Adulteration (Amendment) Rules, 1987.

2. In the Prevention of Food Adulteration Rules, 1955 (hereinafter referred to as the said rules), after clause (f) of the rule 32, the following shall be inserted namely:-

"(g) date of expiry in case of Aspertame marketed as table top sweetener and the expiry period shall not be more than 3 years from the date of packing".

3. After sub-rule (ZZ2) of rule 42 of the said rules, the following shall be added, namely:-

"(ZZZA) Every package of food which is permitted to contain saccharin or any other artificial sweetener shall bear the following label, namely:

"This...........(Name of food) contains
...............Name of artificial sweetener)

(ZZZB) Every package of Aspertame marketed as table top sweetener shall bear the following label;

WARNING

(I) FOR DIABETICS AND CALORIE CONSCIOUS CONSUMERS ONLY:

(II) NOT TO BE USED FOR PREGNANT WOMEN, CHILDREN OR OTHER HAVING SYMPTOMS OF PHENYL KEFOUREA; AND

(III) DATE OF EXPIRY (THE EXPIRY PERIOD SHALL NOT BE MORE THAN 3 YEARS FROM THE DATE OF PACKING).

---

4. For sub-rule (g) of rule 44, the following shall be substituted, namely:--

"(g) any article of food which contains any artificial sweatener except the article of food for which the addition of artificial sweetener has been specified in Appendix-B or these rules".

5. After rule 44-E of the said rules, the following rule shall be inserted, namely:--

"44.F. Restriction on sale and use of Aspertame - No person shall sell Aspertame as table top sweetener except for diabetic persons and calorie conscious consumers under a label declaration as provided in sub-rule (ZZZB) of rule 42".

6. For rule 47 of the said rules, the following rule shall be substituted, namely:

"47. Addition of artificial sweeteners to articles of food. No saccharin or any other artificial sweetner shall be added to any article of food:-

Provided that the permitted artificial sweetener may be added only to an article of food as specified in Appendix-B.

Provided further that aspartame, an artificial sweatener may be added to the following foods in concentration not exceeding 1 g per kg. of the final food or beverage namely:-

(1) Dry Beverage mix;

(2) Colatine Desert mix;

(3) Pudding mix

(4) Topping mix; and

(5) Breakfast cereals."

7. In rule 57 of the said rules, in the Table after item 5, and the entries relating thereto, the following sub-items and entries shall be added, namely:-

1	2	3
6. Cadmium	All foods	1.5
7. Mercury	Fish	0.5
	Other food	1.0
8. Methyl Mercury (calculated as the element)	All foods	0.25

8. In rules 60 and 61 of the said rules, the words "and Brominated vegetable oils" shall be omitted.

9. After rule 62A of the said rule, the following rule shall be inserted, namely:

"62B. Use of release agents in conf ctionary - Spreadasil silicon spray (Dimethyl Polysiloxane) if used, as release agent in confectionery, shall not exceed 10 ppm of the finished product:.

10. For rule 63A of the said rules, the following rule shall be substituted namely:-

"63A. Restriction on use of flavouring agents- The use of the following flavouring agents are prohibited in any article of food, namely:

1. Coumarin and dihydrocoumarin;
2. Quinine;
3. Tonkabean (Dipteryl adorat); and
4. B-asarone and cinamyl anthracilate".

11. After rule 64B of the said rules, the following shall be inserted, namely:--

"64BBB. Use of menthol-Menthol may be used in following food articles in quantities not exceeding the limits shown against each:-

Sl.No.	Food	Maximum limit (Percentage by weight)
1.	Pan Masala	0.03
2.	Chewing Tobacco	0.3
3.	Confectionery	0.1"

12. In Appendix 'B' or Prevention of Food Adulteration Rules., 1955, after item A.07, 10 of Appendix 'B' of Prevention of Food Adulteration Rules, 1955,

the following items shall be inserted, namely:-

"A.A7.10A - Aspartyl phenyl alanine methyl ester commonly known as Aspertame, having empirical formula as $C_{14}H_{18}N_2O_5$ and molecular weight as 294.31, shall be the material which is slightly soluble in water and Methanol. It shall contain not less than 98 per cent and not more than 102 per cent of Aspertame on dried basis. It shall not contain more than 3 ppm of Arsenic and 10 ppm of Lead.

The loss of drying of the material at 105 C for 4 hours, shall not be more than 4.3 per cent of its weight. The sulphate ash shall not be more than 0.2 per cent. It shall not contain more than 1 per cent of diketo-piperzine. It shall also carry the label declarations as mentioned in rules 32(g), 42(ZZZA) and 42(ZZZB):.

(The Gazette of India Part II - Section 3 - Sub-section (i) No.160, 31 March 1987)

266 Canola Versus Rapeseed Oil

After many years during which rapeseed oil was legal for food use in Canada but not in the U.S., F D A. finally in 1985 approved "low erucic acid rapeseed oil" as Generally Recognized As Safe (GRAS) if the erucic acid content is less than 2%. Rapeseed is a common oilseed crop in western Canada, where climatic conditions do not favour cultivating soybeans for this purpose. The highly polyunsaturated oil is used for margarine and salad oil there under the name "canola" or "canola oil", and may contain over 2% erucic acid. In a petition to FDA, American Soybean Association (ASA) has charged that U.S. food processors are illegally using the terms canola or canola oil instead of the FDA-approved term "low erucic acid rapeseed oil" on food labels, perhaps to avoid a possible negative connotation of the latter, perhaps to facilitate the use of imported rapeseed oil as a substitute for U.S.-produced soybean oil. ASA has also petitioned FDA to force food manufacturers to provide label details of other imported oils they use (such as palm oil, palm kernel oil, or coconut oil) which are alternates for domestically produced soybean oil, and to disclose that these vegetable oils are saturated.

(Cereal Foods World March 1987, 81)

267 Cholesterol rule attracts support and opposition.

FDA recently announced standards for label claims of "cholesterol free', "low cholesterol" and "cholesterol reduced." Products making these claims will also have to show full Nutritional Labeling and include the cholesterol and the saturated and polyunsaturated fat content per serving. "Cholesterol free" would require less than 2 mg cholesterol per serving, which plain bread could meet but not egg or cheese bread "Low cholesterol' would require less than 20 mg per serving, while "cholesterol reduced" would require a 75% reduction, with specific per serving amounts for the reduced product and the one used for comparison. American Bakers Association agrees that the existing regulation of cholesterol and fatty acid labeling is unduly restrictive, but is nevertheless planning to submit a statement opposing the requirement of full Nutrition Labeling when any cholesterol statement is made, on the grounds that this may discourage food processors from providing consumers with useful cholesterol information. A similar position has been taken by Independent Bakers Association. *(Cereal Foods World March 1987, 281)*

HYGIENE

268 Oil, fat replacer for low-cal food

Avebe, Veendam Holland has developed an oil and fat replacing product for application in calorie-reduced foods. The product is marketed under the name Paselli SA2.

It can be applied in a number of food products such as dips, dressings, dairy and bakery goods, and replaces more than 50% of the amount of oil and fat content.

The replacer has a potato starch base. When stirred with four to five parts water, it forms a smooth fat-like textured gel with a neutral taste. The gel is thermostable and is miscible with fat, oil and other food components.

The caloric value is 10% to 15% that of oil and fat. Moreover, the amount used in a recipe is restricted because of its low concentration (20% to 25% dry matter).

In combination with oil and fat, it imparts an enhanced creaminess to various foods. Gels based on this replacer are stable in a wide pH range (pH3 to pH7). This makes it suitable for use in acid formulations, the company says.

The SA2 can be used in either pasteurized or cold prepared foods due to its solubility in cold water; its ability to form stable mixtures with

other food components and its thermostable character. For further details contact: Lang Voorhout 16, 2514 EE Den Haag, Holland.
(Food in Canada January 1987, 65)

269 Diabetes Mellitus and Fenugreek seeds

Fenugreek seeds, a common condiment used in Indian homes were found to diminish reactive hyperglycaemia in normal individuals and those with diabetes. Fasting blood glucose, 24 hour urinary sugar excretion, serum cholesterol and triglyceride levels in diabetics were also significantly reduced. Clinical symptoms like polyurea, polyphagia and polydipsia, present in some cases of diabetes were improved. These effects of fenugreek seem to be due to the gum fiber present in it. It has been possible to debitterize fenugreek seeds without compromising on their hypocholesterolemic and hypoglycemic properties. Debitterized seeds are rich in protein and lysine. Since fenugreek seeds, like pulses, are also a source of protein, they can replace pulses in the diets of diabetics.
(Nutrition News 8(3), 1987)

270 Rice whitening with a difference

Whitening of rice retaining the orginal shape, natural lustre and flavour is supposed to be a dream. A Japanese manufacturer says his new rice whitening machine, with its moving screen mechanism and natural flow-down system, brings the dream into reality.

Yamamoto Manufacturing Company of Japan has developed a novel rice whitening machine which comes with two kinds of rolls namely abrasive and friction types built in one unit. This is a multi-stage whitening machine while the conventional one normally has only single stage. The machine is felxible so that it corresponds to any grade of rice.

Main features:

Wide range of combination of abrasive and friction rolls gain the most suitable whitening effects.

As the pressure variation in the milling chamber during milling is absorbed through the springs attached on the top of moving screens, low noise operation and high energetic efficiency can be obtained.

Pressure in the milling chamber is automatically adjusted at a fixed level by the opening rate at outlet in conjunction with the movement of screen.

All rice grains can be cleared out of the milling chamber after whitening without any additional cleaning step.

Moving screens and milling rolls can be easily replaced with new ones in a short time without any further overhaul work on shaft, bearings, outlet, etc.

Up-right structure of the compact design allows this machine to be installed in narrow space.

The machine can also be utilized for polishing and cleaning purposes by the roll combination of friction-friction type.

As the rice grains are milled under the uniform pressure and low temperature without any excessive local stress on the rice grains, bran layers are completely peeled off the grains and finished to fine white rice keeping the original flavour of rice. Centrifugal forces act upon all round the milling rolls uniformly and all the circumferences around screens can be utilized effectively for both abrasive and frictional milling. This produces the natural lustrous skins of rice and polishing stage can be omitted as the case may be . Uniform milling effect due to the natural flow-down of rice and pressure adjustment by up-and-down movement of screen reduces the broken ratio and gains the high recovery rate.
(Asia Pacific Tech. Monitor, January-April 1987, 11)

271 Tamarind can prevent fluorosis

Regular use of tamarind in food preparations could prevent fluorosis by inhibiting absorption of fluoride. Experiments showed that a concentration of a standard solution of sodium fluoride of 10 parts per million (ppm) could be brought down to 2-ppm by adding tamarind gel alone and down to 0.05 ppm by adding a small amount of common salt, according to a research study by Dr Sriramachari, former Additional Director-General of the Indian Council of Medical Research.
(Deccan Herald 7 August 1987, 9)

272 Low-calorie desserts and confections

Reduced-calorie desserts and confections are becoming the food industry's most exciting food categories, and within the next few years are expected to show considerable growth. The markets for reduced-caloric desserts and confections offer exceptional opportunities to food companies because consumers are indicating a strong interest in dieting and weight watching, and they are willing to pay a premium for good tasting reduced-caloric treats. The key to these markets is being able to prepare good products, with polydextorse this is possible.

Polydextrose is a unique, low calorie bulking agent which allows the creation of reduced- and low-calorie foods by replacing all or part of the sugars and some of the fats, without sacrificing mouthfeel, texture, bulk or palatability. It is tasteless, and is also non-sweet, non-cariogenic and suitable for the diabetic. It is useful in making ice creams, baked goods, puddings, frozen dairy desserts, confectionery, etc.

Polydextrose is a patented food ingredient developed by Pfizer Chemicals Europe and Africa.Polydextorse provides not only the bulk but also gives the appropriate texture mouthfeel qualities normally provided by sugar and fat.
(Deccan Herald 1 June 1987, 15)

TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES

NEW INDUSTRIES

273 Solvent extraction plant

A Rs.3-crore solvent extraction plant to produce 150 tonnes per day of soyabean and rice bran oil has been put up by Mid-India Oils and Exports which has been promoted by a group of technocrat entrepreneurs. The plant will use many varieties of oilseeds and oilcakes for full capacity utilisation and not be affected by the shortage of any crop.

Located near Nagpur, the plant is the first of its kind in the Vidarbha region to utilise the soyabean grown in Maharashtra which otherwise is used by similar units in Madhya Pradesh.
(Chemical Products Finder 5(11) 1987, 10)

274 Processed food plant

Ready-to-eat processed food products will be manufactured by All Seasons Foods Ltd at its projected plant near Nashik in Maharashtra. The capacity of the fully-automated and computerised plant will be 30,000 tonnes per annum. Booth and Smith Associates of the UK will provide technical collaboration.

The company is earmarking half of the production for export.
(Chemical Products Finder 5(11) 1987, 10)

275 Fruit drinks project

The capacity of the ammonium nitrate plant at Patalaganga in Maharashtra,

promoted by Atash Leasing and Industries Ltd., has been raised to 18,000 tonnes annually with the installation of a prill plant. The company is now setting up a fruit drinks project in NOIDA near New Delhi. Parle Agro Private Limited is financing the plant whose capacity will be 81 million aseptic packs.
(Chemical Products Finder 5(11) 1987, 13)

276 Fortified salt project in TN

An iron fortified salt manufacturing project, the first of its kind in the country, is coming up at Vallikonam in Thanjavur District of Tamilnadu, Mr. D. Sridharan, Chairman and Managing Director of the Tamil Nadu Salt Corporation (TNSC) said on Friday.

The project was set up following studies which revealed that intake of iron fortified (IF) salt was essential for combating anaemia which was prevalent among 40 per cent of the country's population.
(Deccan Herald 12 July 1987, 11)

277 Potato processing plants

India is going in for collaboration with Sweden for the manufacture of potato processing plants in a big way, reports Unifin.

According to official sources, the new company called "Winner Technology Private Limited", is being set up at Indore in collaboration with the Swedish film, PPM AB.

The new company would be able to supply about five plants a year, each with a capacity to process over 1.5 tonnes of raw potatoes and other root vegetables per hour.

Each plant would cost about Rs. 70 lakh and utilise more than 12.5 million tonnes of root vegetables per annum.

The market for the potato processing machines exists not only in India but overseas in South-East Asia, the Soviet Union and East European countries.
(The Economic Times 29 July 1987, 5)

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RAW MATERIALS

278 New edible oil source found

Scientists of the National Institute of Nutrition have found a new source for extracting edible oils from myrobalan fruit of terminalia bellerica tree grown in the deciduous forests. Apart from its highly nutritive value, this oil is commercially exploitable. The kernel of myrobalan fruit is a good source of phosphorous, calcium, magnesium and iron. The new oil has been found to be safe for human consumption and, if blended with vanaspati it would make an ideal substitute for groundnut or palmolein oil.

(Industrial Products Finder August 1987, 75)

279 New hybrid tomato

Hybrid 922 processing tomato has been developed as a supplement to Hybrid 785 because it has continually shown outstanding high solids and high viscosity. Based on the data from last years trials and this years trial at both Woodland and Three Rocks, CA, Hybrid 922 had the highest ratings for both solids and viscosity, Dr. Court Nichols told industry experts who attended the recent processing tomato trial in Woodland, California.

(Food Production/Management October 1987, 18)

STORAGE AND INFESTATION CONTROL

280 FAO project to improve food storage in Tamil Nadu

India and the Food and Agriculture Organisation (FAO) have signed an agreement for improving the storage and processing of foods by farmers in select rural blocks in Tamil Nadu. The main objective of the assistance is to improve the capability of the farmers to store and process foods and reduce post-harvest food losses in 100 villages by introducing new techniques.

(The Hindu 24 October 1987, 4)

281 A microbial approach to keep stored fruits fresh and healthy mooted by USDA

It is estimated that up to 20% of the US fruit is damaged after harvest mainly by fungi and yeast. In semi-tropical and tropical countries of the Third World this loss may be as high as 50% due to tropical climate and improper storage. This costs the world over, loss of several millions of dollars each year. Although chemicals that kill these organisms (fungi and yeast) prevent losses from being higher, such chemicals can pose environmental and safety concerns. Now, however, a biological approach to controlling the organisms has been developed by USDA researchers, working under plant pathologist Charles L Wilson at USDA's Applachian Fruit Research Station (Kearneyville, W. Virginia). Wilson has isolated bacteria and yeast like organisms that kill the harmful fungi and bacteria and thus keep stored fruits healthy. The beneficial organisms work in many directions. Some produce chemicals similar to antibiotics that kill the harmful organisms. Other eat nutrients on the fruit surface to starve the harmful organisms. An example is the soil bacterium *Bacillus subtilis* which Wilson has patented for control of Brown Rot Fungus, the number one disease of picked stone fruits, such as peaches and plums. The bacterium works primarily by producing an antibiotic, that kills or prevents the growth of the fungus.

(Chemical Weekly 20 October 1987, 74)

282 New insecticide for food industry

A new pyrethroid insecticide is being introduced by Sorex Ltd., Widnes, Cheshire. Called FENDONA WP, the new insecticide is suitable for use in domestic premises; in public buildings - including hospitals, hotels and restaurants; and in industry - including food processing plants. FENDONA WP may be used in kitchens and food consumption areas when applied as directed. The insecticide, which contains alphacypermethrin, was developed by Shell Research Ltd. It has low-toxicity to humans and domestic animals. Conveniently packed in 40g sachets for direct dosing into the sprayer. It can be applied with a knapsack

sprayer, or other conventional manual or power sprayer equipped to produce a coarse spray. Normal application rate is 1 sachet (40g) in 5 litres of water to cover 125 sq. metres; special rate (on dirty or highly absorbent surfaces, in heavy infestations or where very long residual action is required) is 2 sachets in 5 litres of water. Cost of a pack (10 x 40g sachets) is £20.50.
(Environmental Health 95(4) 1987,23)

283 A breakthrough in pesticide

A non-toxic herbal pesticide developed by a local scientist promises to usher in a revolution in agriculture. Tests so far carried on the pesticide, called "Indiara", on crops, vegetables and fruits in the United States of America, Australia, Germany, parts of Maharashtra and Indore in Madhya Pradesh, have been very favourable. The pesticide has been developed by Mr. M.N. Sukhatme, a owner of a small scale pesticide firm at Pune, after 12 years of research. The pesticide is made from garlic, ginger, mustard, acorum, calamus, impomea muricata and rametha. Researchers had earlier found out the garlic and neem worked wonders as insecticides. But their problem was to stabilise the product. Mr. Sukhatme's research showed that the preparation stored in a cool dry place and away from direct sunlight could remain stable for two years.

The tests in Narayangaon tehsil of Pune district, the biggest exporter of tomato to Delhi, after Mr.Sukhatme went into commercial production following the issuance of a provisional licence in April this year, has evoked a tremendous response from the farmers. The Hemisphere Inc, which is awaiting the licence from the Environmental Protection Agency (EPA) of the USA, will market the product as "M.N. Sukhatme technology" while the Australian firm in Brisbane, which has got an oral okay from the Government is awaiting written permission to market the pesticide as "Ausara". He said he had carried out all the tests as specified by the World Health Organisation (WHO). Mr. Sukhatme, who produces one tonne of the pesticide per month, will gradually increase his unit's capacity to four tonnes by October depending on the availability of kerosene, which is required for the liquid formation of the product.
(Chemical Industry News, September 1987, 359-60)

FOOD ADDITIVES

Nil

PROCESSES

284 Wax and tapioca

National Starch has developed two new products under UHT conditions to improve the quality of processed dairy products. After an extensive two year research programme involving Alfa-Laval, Tetra Pak, Reaseheath College and the Dutch Dairy Institute, Nizo, the company has come up with Thermflo (a waxy maize starch) and National Frigex (a tapioca based starch), which according to the Company, have an improved flavour and texture and which are also cheaper to process. All products have been thoroughly tested on Alfa-Laval plant and on Tetra Pak equipment at Reaseheath College in Cheshire.

(Food August 1987, 15)

285 Spicy coffee (Australia)

Some firms at Melbourne in Australia now produce flavoured instant coffee mixes. Flavoured coffee is pre-blended food product comprising instant coffee, spices, milk solids, sugar and flavourings, to which only boiling water has to be added. Some companies in Australia produce Spicy Fruit Muffins which are suited for use with grape fruit and cottage cheese. A few companies make some sauces called as 'Mornay' (a rich, slightly spicy cheese sauce made in the traditional way from fresh ingredients incorporating fish stock) and 'Mediterranean' (a spicy Mediterranean sauce with a touch of garlic).

(Spices News Letter 21(6&7) 1987, 4)

286 Gur from sweet sorghum

The scientists at the Indian Institute of Sugarcane Research (IISR), Kanpur, have found that gur can be extracted from sweet sorghum. Nine varieties of sweet sorghum have been identified for commercial cultivation. The gur made from sweet sorghum is as good as that got out of

sugarcane, and the process is also the same.
(The Hindu 11 November 1987, 24)

287 Powdered egg is made with whey

A new powdered egg product made by co-drying liquid whole egg with whey syrup is claimed to be about 10% cheaper than egg powder whilst having the same performance. Called Novatec PI, it is made by Specialist Dairy Ingredients of Chester. It is a totally natural product and is packed in 20 kg cartons.
(Food Manufacture March 1987, 21)

288 Alcohol from beetroot

The Ganganagar Sugar Mills in Rajasthan has succeeded in developing alcohol from beetroot for the first time in India. Other states are also making efforts to utilise feedstocks, other than sugarcane molasses, to produce alcohol. Punjab is lanuching a Rs. 500 crore scheme for the installation of 10 distilleries with a capacity of one lakh litres per day each to produce alcohol directly from sugarcane juice. Madhya Pradesh plans maize-based alcohol plant and West Bengal proposes to produce alcohol from beetroot. Himachal Pradesh also has chalked out a scheme to produce alcohol from abundant fruits available in the state. These steps of the states to produce alcohol from different sources were the outcome of their bids to lessen dependence on Uttar Pradesh, the largest cane producing state, for alcohol.
(Industrial Products Finder October 1987, 67)

289 Keeping bananas fresher

Every banana producer or exporter is always eager to use techniques available for keeping his produce fresh for a longer period. Eagerness to use new techniques is more so in exporters because of export market demands on quality and price. Now Malaysian Researchers (at University of Malaya and Malaysian Agricultural Research and Development Institute (MARDI)) claim to have succeeded in developing new techniques for the purpose. The Botany Department of University of Malaya (UM) has encountered positive results in a project undertaken with the assistance of the Australian International Research Centre, for delaying the ripening of 'Pisang emas' a variety of banana by 15 weeks for export purposes.

The new technique discovered is different from the current popular method of wrapping the banana in polythene bag which is effective for only about 11 days. Under the new technique, according to Prof. Ungku Aziz, Vice-Chancellor Royal, UM, unripe 'Pisang emas' were treated with 'Bynonyl' an anti-fungal chemical not dangerous to health and then wrapped in air-tight plastic bags. The bananas would keep well in a 15 degree celsius temperature and would ripen normally within a few days once unwrapped.

This method would also reduce the rate of fungal growth and ripening besides upgrading the quality of the fruit. Since the fruit could be prevented from going bad for a longer period under the new method, it could be exported by sea instead of air making the fruit cheaper. The new find has yet to be tried out by producing countries like Jamaica and the technique is available for commercial purposes. For details contact: Prof.Datuk A. Nawawi, Botany Department, University of Malaya (UM), Lembah Pantai, Kuala Lumpur, Malaysia.
(Asia-Pacific Tech Monitor May-June 1987, 31)

290 How to keep fish fresh for weeks

US Scientists have found a new method to keep fish fresh for weeks, which could prove to be good news for fish-eaters. A Professor and a graduate student at Cornell University's State Agricultural College in Ithaca, New York, claim they have found a way to keep seafood fresh for as long as five weeks in the tropics without refrigeration and without much expenditure. Professor Robert R. Zall and his student, Javier Toledo Flores, found skin bacteria could be killed by simply dipping the fish in hot water for five seconds. Short baths of potassium sorbate or chloride dioxide, chemicals used in food preservation, also killed surface bacteria. The researchers then utilized a phenomenon well known to home ice-cream makers. If salt is added to the ice in which the fish are packed, the fish can be chilled to below the freezing point of water without the fish being frozen. Such "super-

chilling" preceded by blanching in hot water can keep the fish fresh-tasting and non-smelly for as long as five weeks.
(Deccan Herald 24 October 1987, 15)

291 Novel grain processing method

TDRI has recently developed a new technique for milling sorghum and millet on roller mills, In this process, very large amounts of tempering (conditioning) water are added to the whole grain sufficiently long before milling for the grain to absorb the water completely. Depending on the variety up to 28% of water is added to sorghum and 10% to pearl millet. The wetted grain is soaked for six hours at 50-60 C in the case of sorghum and at 20-30 C for millets. The treated grain is then milled on a conventional roller mill designed for making white flour from wheat. Flours with texture and colour similar to white flour from wheat were produced on a six roller mill at extractions of between 53 and 62% from most of the eleven sorghum varieties tested.
(Documentation Bulletin No.68, 1987, 18-19)

292 Improved clam processing brings more income

Clam is a food item rich in protein and minerals. The Vembanad lake which extends from the south of Cochin Port to the extensive paddy fields of Kuttanad in Kerala is the richest source of clams. The shell of clam is the most important source of calcium carbonate made use of in the cement industry. A small portion of clam collection is boiled to recover the meat which is sold in local markets for human consumption. But no serious attempt was made in its preservation and utilization by applying appropriate technology. Clams are heated in suitable vessels for about 30 minutes. Then the meat and shell are separated by rigorous shaking through a specially designed basket. Cost of fuel material for boiling clam is a major problem for womenfolk as it is very costly. They have either to go to distant places for collecting fuel material or purchase it locally. Each family spends about Rs.8/- a day for fuel alone, Therefore, CIFT designed and developed an improved hearth for heating clam with paddy husk as fuel. This reduced the cost of fuel to Rs.2/- only, thus saving Rs. 6/- per family per day.

This hygienic way of handling and packaging clam meat resulted in selling it at higher prices in local markets for home consumption. As a result of adopting the improved hearth for cooking clam meat and its handling and packaging, the income of an adopted family has been increased to the extent of Rs.150-200 per month.
(Beverage & Food World April/June 1987, 47)

293 Lasers for sterilising wine

Wine sterilisation is one of the newest and most unusual applications currently being investigated for the excimer laser. Once used purely for scientific research, the excimer laser, a powerful, pulsed ultraviolet light source, is rapidly emerging as an important tool for industrial and commercial applications. Recent experiments by Lambda Physik of West Germany, represented in the UK by Coherent (UK) Ltd., have shown that the excimer laser light can kill off the bacteria or yeast bugs present in wine, without affecting its taste. The common technique for sterilising wines is to add sulphur dioxide (SO_2), but unfortunately, the more the SO_2 is added, particularly to red wines, the more likely the drinker is to suffer a headache or other side effects. Lambda Physik, through experimental work carried out at its Goettingen applications laboratory, has discovered that the ultraviolet light of an excimer, at a pulse frequency of 200 shots per second, is as effective as sulphur dioxide for sterilisation. The effective penetration depth of the laser into a wine is 1-2mm, so it takes about one minute to sterilise one litre of wine flowing through a 2 mm diameter glass tube.

Further information is available from Coherent (UK) Ltd., Cambridge Science Park, Milton Road, Cambridge CB4 4FR.
(International Bottler & Packer April 1987, 8)

294 Corn popped without oil

With a unique kernel measure that permits continuous non-stop popping, the Popcorn Pumper makes large sized fluffy popcorn with minimum calorie content because it cooks with hot air, instead of oil. The device is said to perform faster than other popcorn makers, popping more corn and leaving fewer unpopped kernels.

For further information write to: Wear Ever-Proctor Silex Inc., 1089 Eastern ave, Chillicothe, Ohio 45601, USA.
(Industrial Products Finder September 1987, 174)

295 Oil treated partially filled ice cream

Partially filled icecream was prepared with an aim to reduce the cost of production and at the same time to enhance the nutritional status of the icecream. The icecream mixes were tested for viscosity, freezing time and whipping ability and the resulting icecreams for overrun, flavour, body, texture and melting resistance. The experimental icecreams with different levels of safflower and cottonseed oils exhibited maximum relative viscosity when treated with agar-isab stabiliser as compared with the gelatin stabilizer. Whipping ability was not much influenced by the incorporation of oil. The whipping time ranged from 1 to 6 minutes in all the icecream samples. Overrun was found to be more than 100% in case of the safflower oil treated icecream, others falling in the range of 50 to 75%. An increase in the degree of substitution of butter fat with the oils caused a decrease in the melting resistance of icecream. The incorporation of oil did not influence the freezing time significantly. Icecream containing Dalda vanaspati gave the best results in terms of body and texture, flavour and melting resistance even up to 25% replacement level. Icecream containing groundnut oil was ranked next to Dalda treated icecream is acceptable by the judges. Cottonseed oil treated icecream gave some flavour problems when used at the highest level of replacement (more than 25%). At lower replacement levels of 10 to 15% no flavour defect was noted.
(Beverage & Food World Jan./March, 1987, 25)

BYPRODUCTS AND WASTE UTILIZATION

Nil

PROCESSED PRODUCTS

Nil

EQUIPMENT AND MACHINERY

296 High-output cooker-extruder

A high-output cooker-extruder from Britain, which can be easily adapted to process a great variety of food products, is claimed tc offer attractive speed and operating cost advantages over conventional cooking processes. The Twin-Screw Cooker-Extruder can provide a continuous output capacity of 200 to 500 kg/h. The design is said to allow precise control of moisture content, leading to substantial savings on energy, and far less human supervision is required than with batch-cooking techniques. The two intermeshing steel screws are assembled from a selection of modular components in order to optimise the compression, shearing and mixing characteristics for any particular end product. The barrel casing in which the screws rotate is also assembled in sections, so that wear-prone parts can be replaced easily at minimal cost. It is claimed that cooker-extruders offer particularly attractive advantages in processing cereal and bakery products, and that they are being used increasingly by manufacturers of confectionery, snack and animal-food products.

For further information write to: Sale Tilney Technology PLC, Weybridge, Surrey KT15 2RH, U.K.

(Industrial Products Finder August 1987, 161)

297 Industrial drying systems

Industrial drying systems specialises in reducing moisture of various materials after analysing the complete moisture isotherm curve and utilising critical moisture content approach. Hence optimised equipment size and reduced heat requirement are achieved. The company offers heating systems using waste heat available in the plant or by using steam, hot oil, or pressurised hot water. Where gas or oil is available direct fired system with smokeless combustion products are also offered. These heating systems can also be extended for various applications like baking and curing a variety of products.

For further information write to: Industrial Drying Systems, 5 Srirangan Avenue, 53 Pantheon Road, Madras 600 008.
(Industrial Products Finder April 1987, 164)

298 Double cone dryer

Multifab Engineers offers Double Cone Dryer having very high thermal efficiency. It has a double conical vessel with a rotating system and a condenser/receiver for solvent recovery. The drying area has a clean inside surface that keeps the product in constant movement, eliminating any product retention. This makes drying system versatile as frequent product changes are possible without any inter-batch contaminations. This dryer has higher energy efficiency-almost 40 to 50% - as compared to conventional dryers like tray, spray, fluidised bed and flash drying.

For further information write to: New Multifab Engineers (P) Ltd., 225 Gala Complex, D Upadhyaya Marg, Mulund West, Bombay 400 080.
(Industrial Products Finder September 1987, 23)

299 Microwave continuous food drier

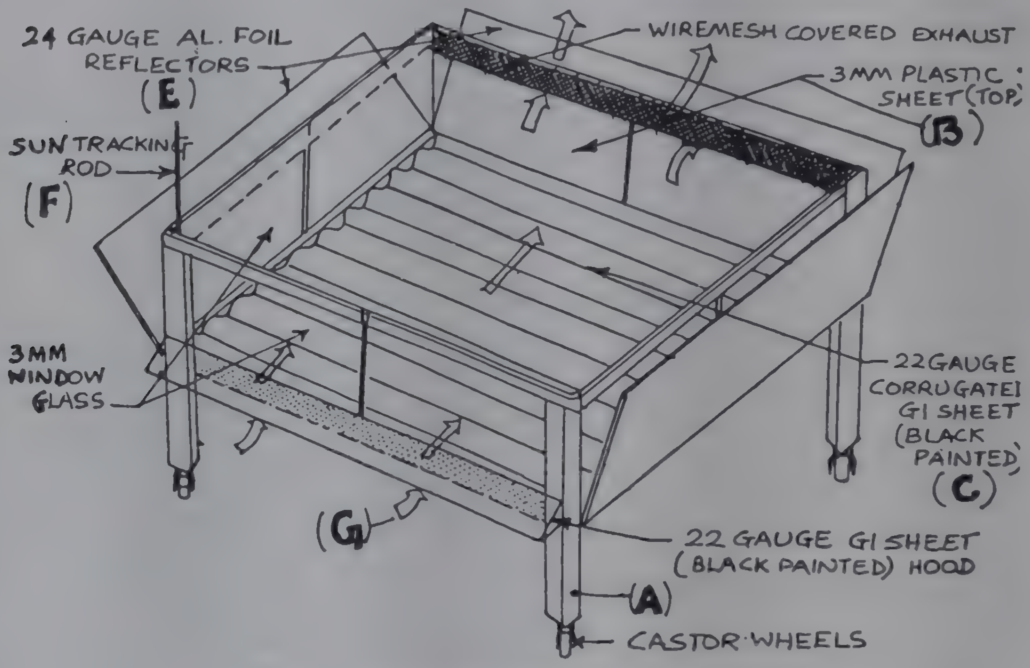
Hi-Tec System's recently launched multi-magnetron continuous process commercial microwave drier has already aroused the interest of many sectors of Australian industry and could generate hundreds of millions of dollars in export sales, according to its designers. Successful trials have been carried out on food products such as wheat, rice, pecans, macadamias, flour and hops. Designed by a research team led by Engineer Mr. Alan Fry and developed through State and Commonwealth grants, the drier permits continuous process drying with a high level of control and energy efficiency. The drier has produced results demonstrating an energy consumption of less than half that of a comparable gas or oil fired drier. The drier's cooking system retains virtually all microwaves within the system, and an unimpeded conveyor moves product in, and then out, of the drying chamber. Whereas traditional chamber design has allowed for only one magnetron per chamber, the chamber configuration in Hi-Tec System's drier enables magnetrons to be fired side by side and opposite each other, with 16 magnetrons in each chamber.

For details contact: Mr. Keith Thornton, 4, Morona Avenue, Wahroonga, NSW 2076, Australia.

(Asia-Pacific Tech Monitor May-June 1987, 31-32)

300 Solar cabinet copra dryer

The common practice of making copra is by drying the split coconuts under the open sun on cement or mud floor for 7 to 10 days. Copra obtained by this method is generally of poor quality because prolonged exposure under open conditions results in microbial infestation and contamination from dirt and dust make the copra inferior. Also copra drying in the sun becomes impossible during the rainy season. To overcome these problems the Central Plantation Crops Research Institute, Kasaragod, India has developed a solar cabinet dryer.


24 GAUGE AL. FOIL REFLECTORS
(E)
WIREMESH COVERED EXHAUST
3MM PLASTIC SHEET (TOP)
(B)
SUN TRACKING ROD
(F)
3MM WINDOW GLASS
22 GAUGE CORRUGATE GI SHEET (BLACK PAINTED)
(C)
(G)
22 GAUGE GI SHEET (BLACK PAINTED) HOOD
(A)
CASTOR WHEELS

.Fig. 2. Solar cabinet dryer (Scale 1=10 cm)

This dryer is of chamber type having direct heating and natural air convection arrangements. The dryer mainly comprises: (A) a cabinet frame made of jack wood with castor wheels for mobility. (B) transparent covers on the four sides of the frame with 3 mm glass pane, and the cover on the top with 3 mm acrylic sheet and with hinges to facilitate opening of the dryer, (C) the drying surface is made of 22 guage corrugated GI sheet to obtain 10% more area per unit space and has an area of 1.06 square metres. (D) coir fibre insulation of about 5 cm thick (2kg) between the drying surface and wooden frame. (E) reflectors made of 24 guage aluminium foil and mounted on reaper frame on three sides, (F) suntracking arrangement, (G) air inlet on the front side at the bottom and (H) exhaust outlet at rearside on the top.

The drying surface is always made to face the sun with the help of the castor wheels and an indicator rod on top of the frame.

Processing of coconuts

Fully matured (12 months old) coconuts are selected for copra making. After harvesting, the whole nuts are stored for 4 to 6 weeks. The husk is removed and the nut split into two halves. The split nuts are kept inverted for 15 minutes to completely drain the adhering water. Then the cups are transferred to the dryer.

Operation of the dryer

The split nuts are loaded on the drying surface with the cups facing up. The dryer is positioned to face the sun with the help of the indicator rod. The dryer is moved to track the sun twice during the day at 3 hr intervals for effective trapping of solar energy. Heat is generated inside the cabinet due to absorption of solar radiation and this helps the moisture in the copra to evaporate quickly. The moisture-laden air escapes through the exhaust vent. At the close of the day, the cups are covered with gunny cloth and the dryer is closed. At the beginning of the second day, the kernels are detached from the shells and they are kept for further drying.

Performance

The capacity of the dryer is 90 coconuts per batch (14 kg of copra). The drying is accomplished in 3½ to 4 days thereby reducing the drying time by 50% as compared to the conventional method. The temperature and relative humidity inside the dryer during drying was found 17 C more and 22% less respectively compared to the respective ambient factors. The dryer costs about Rs. 2200/- and the cost of drying is 0.85 paise per kg.

For details contact: Director, Central Plantation Crops Research Institute, Kasaragod 670 124, Kerala, India.
(Asia Pacific Tech Monitor May-June, 1987, 35)

301 Solar kitchen is in the offing

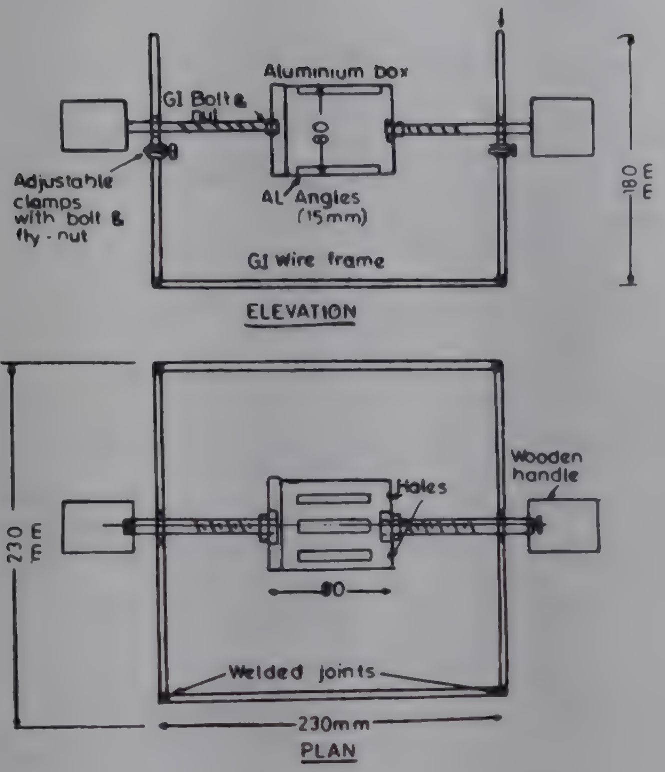
Australian researchers have developed a solar cooker that can match the performances of gas and electrical stoves. The new cooker is claimed to do practically anything a gas or electric stove does and, because it includes a small pressurized water vessel, can also heat water or power a refrigerator. Previous solar cookers proved unpopular for several reasons; they could not store heat; often had to be placed outdoors; were slow to heat up; could be used only a few hours a day; and needed frequent repositioning of collector mechanism to follow the sun. The new cooker has no moving parts, makes use of common materials, and can fry, bake, boil or steam food. Its hot plate can be placed indoors and the heat storage mechanism allows cooking even after sunset. Development of the cooker into a readily acceptable practical form is expected to take about one year. The idea was developed by a team headed by Dr. David Mills, School of Physics, University of Sydney, NSW, Australia.
(Invention Intelligence July 1987, 262)

302 Single step food processor

The Victorio Strainer eliminates the need to peel or core fruits and vegetables. This convenient appliance separates the juices and pulp from seeds and skins in one single process. Made of aluminium and nylon, the large capacity unit is said to be ideal for all canning and freezing. It is not affected by boiled fruits and vegetables, and is easily cleaned.

For further information write to: Vitantonio Mfg Co., 34355 Vokes Dr, Eastlake, Ohio 44094, USA.
(Industrial Products Finder September 1987, 100)

303 Groundnut roaster


Aluminium box
GI Bolt & nut
80
Adjustable clamps with bolt & fly-nut
AL Angles (15mm)
GI wire frame
180 mm
ELEVATION
230 mm
Wooden handle
Holes
80
Welded joints
230mm
PLAN

The diagram shows a groundnut roaster which can be fabricated at low cost. Its GI wire frame is made to suit the gas stove and the clamps facilitate height adjustment of the cylindrical aluminium box. The GI wire is welded at various joints. Three aluminium angles spaced equally inside the box are rivetted to the box to ensure uniform heating of the contents. The clamps, the GI bolts and nuts and the wooden handles are cheaply available at any cycle shop. Small holes can be drilled at the base of the box for exit of hot air, thus controlling pressure inside the box. A shutter with hasp and staple can also be provided in the box for charging and removing the roasted contents. Alternatively, provision can be made for a lid similar to the pendent holder of an electric bulb.

The proposed appliance can also be used for roasting coffee seeds, maize, corn, kabab and brinjal. A long rough sewing needle (sụa) is pierced through the kabab/brinjal and roasted on the adjustable clamp supports, which act as bearing. The new roaster offers uniform heating compared to the frying-pan 'karahi', avoids wastage due to over burning, and saves fuel.

For further information write to: D.B. Limaye, Professor of Production Engineering, Yeshwantrao Chavan College of Engineering, Nagpur or V.V. Khandekar, Professor of Mechanical Engineering, College of Engineering, Karad 415 110.

(Invention Intelligence July 1987, 288)

304 Hi-Tech filters

Ultrafilter (India) Pvt Ltd., Bangalore, is an NRI sponsored company having collaboration with Ultrafilter GmbH of West Germany. The company offers the same complete range of cartridge filters as is offered by the parent company. The filters hitherto were being imported into India. In the compressed air and gas purification system, the filter removes oil, water and dust completely. The unique Ultrafilter element, which is patented in 37 industralised countries has a three stage filtration effect. Oil and dirt laden compressed air flows through the filter element inside to out. The coarse particles of dirt and pipe scale are retained on the inside prefilter. Oil, water and remaining fine particulate matter then pass into the main ultrafilter medium. The three-dimensionally layered microfibre media provides the next two stages of filtration. Here, up to 99.99998% of all oil and water aerosols and dirt particles down to a size of 0.01 micron are trapped. Liquids attach to the fibre and by coalescing action of the oil and water aerosols, bulk liquid is formed. The liquid so formed is carried by the air flow to the outer foam sock which has a very high surface area. Within the cellular structure of the sock, the air and liquid separate, the air flowing from the element in the upper section whilst the water and oil gravitate to the bottom of the filter housing. Oil and water are regularly discharged without the need for any maintenance. Ultrafilter efficiency remains constant. Vapour form of oil and odours are removed by patented two stage activated carbon filters. For food, beverage and pharmaceutical use, the air is further passed through a sterile filter giving 100% sterile air or gas. Ultrafilter liquid filters are used to purify liquids including process water, parenterals and injectables to 0.2 micron particle size.

For further information write to: Ultrafilter (India) Pvt. Ltd., Basava Nivas, Second Floor, 29/2, K.H. Road, Bangalore, Karnataka 560 027.

(*Industrial Products Finder September 1987, 84)*

305 Meat tenderizer

Because tenderness largely determines the value, form and end-use of meat, food animal processors are interested in taking actions, which maximize the basic tenderness present. Considerable research already has taken place to find various meat tenderizing techniques and methods for use after slaughter or later in the fabrication of meat products. Well known are chemical methods, aging, electrical (stimulation) methods, restraining methods, pressure methods and mechanical methods. Based on mechanical method, Korea Food Machinery Ind., a manufacturer and trader of meat processing equipment has lately developed a meat tenderizer. This machine adopts a physical method to tenderize meat by cutting fibrous tissues of meat and tough meat. Also, it makes cogwheels on the surface of meat to tenderize meat and further reduce its cooking time. Machine measures 575 mm wide, 370 mm long, 480 mm high and weighs 42.5 kg. It runs at 50 rpm speed. Its product capacity is 18-25 cm.

For details contact: Korea Food Machinery Ind., 27-29, 1-ga, Sungsu-dong, Sungdong-gu, Seoul, Republic of Korea.

(Asia-Pacific Tech Monitor May-June 1987, 32)

306 Hygienic centrifugal pumps

Raj Engineers manufactures hygienic centrifugal pumps for use in food, beverages, brewery, dairy, pharmaceutical, chemical and other process industries. All the components coming into contact with liquids are made out of high quality stainless steel. The bearing frame oil chamber provides constant lubrication to the bearings. When pumping products with high temperature, a steam jacketed cover can be fitted for the transfer to cooling system to maintain the product set up. These pumps feature uniformity in overall dimensions and can be changed from gland packing to mechanical seal with standardised conversion. All the pumps are fitted on portable trolley stand with electric motors for easy movement in the plant to be connected for use with other tanks and vessels. These centrifugal pumps are available in nine standard port sizes from 20 to 50 mm, in open, semi-open and closed type impellers having discharge capacities from 6,000 to 80,000 litres per hour.

For further information write to: Raj Engineers, S/3 Raj Rajeshwari Apartments, Narayan Nagar, LBS Marg, Ghatkopar (West), Bombay 400 086.
(Industrial Products Finder August 1987, 104)

307 Powder sifter

The Rota-Sift is a high capacity, versatile compact and an economical centrifugal sifter used for the continuous separation of dry or moist materials, even those that tend to ball or agglomerate. It can effectively handle a wide variety of chemicals, pharmaceuticals, foods, dairy products, animal feed and a wide variety of powders or granules. Material is uniformly fed into the cylindrical sifting chamber by means of a feed screw which discharges the material into a rotating helical paddle. Centrifugal force accelerates the movement of the particles against the screen. The rotating paddles, which do not contact the screen, break up soft agglomerates and propel individual particles through the screen. Oversized particles, hard lumps and trash are ejected and pass directly to the discharge spout. The choice of separating media is wide, covering nylon, woven wire meshes and perforated screens. The Rota-Sift can be used for everything from scalping at very high capacity to retention of particles as small as 37 microns. Features include dust-free sanitary operation, quiet vibration-free action, quick screen change, easy cleanability, outboard bearings, large inspection door, and compact design with low power requirements.

For further information write to: Aro-Grad Engineering, 689 GIDC, Makarpura, Vadodara, Gujarat 390 010.
(Industrial Products Finder October 1987, 105)

308 Effluent treatment plants

Kaveri Engineering Industries Limited, in technical collaboration with Dewplan (ET) Ltd., U.K. offer state-of-the-art effluent treatment plants on a turnkey basis. The system make use of a unique bio-filter which uses plastic media. Features include: maximum COD reduction, biologically inert, neither attacked by nor inhibiting growth of the treatment bios; and capable of operating at high hydraulic loadings. The plants find applications in a wide range of industries including sugar, dairy and distillery.

For more details write to: Kaveri Engineering Industries Limited, Environmental Engineering Division, Golden Rock, Tiruchirapalli, Tamil Nadu 620 004.

(Chemical Products Finder, October 1987, 114)

309 Bakery-oven cleaner

A hard crust of black sticky mass is formed on the surface of oven and conveyor bend, when not properly cleaned, due to burning of carbohydrates of flour and fats/oil into carbon-fat complex on prolonged heating, particularly in the case of biscuit manufacturers. This sticky mass makes the conveyor-bend rigid and inflexible and so more power load is required for its rotation. The hard layer of sticky mass, formed on the inside surface of oven, reduces its heating/baking efficiency, since carbon-fat complex is non-conductor of heat. DeFATOL is produced specially for cleaning this hard to clean carbon-fat complex crust. The non-toxic, non-flammable, non-hazardous and non-corrosive DeFATOL is produced from selected ingredients of low toxicity for bakery and biscuit manufacturers. It does not leave behind unpleasant odour, after washing, which may otherwise destroy the original flavour and taste of the baked food products.

For more details write to: Chemtac Syndicate, 3 Nilkanth Sadan, Peru Baug, Aarey Road, Goregaon (East), Bombay 400 063.

(Chemical Products Finder May 1987, 80)

310 Automatic bread bakers from Japan

One of the fastest-selling products in Japan this year, a machine that automatically bakes bread in four hours or less, will hit the U.S.

market in time for Christmas. Matsushita Electric Industrial Co. began shipping its "Bread Bakery" to the United States on September 30. The machine will have a list price of $330. The machines take about three to four hours to bake one loaf of bread. The temperature, humidity, mixing action, baking time and other variables are controlled by a computer. The user need only pour in the ingredients - yeast, flour, butter, sugar, salt, powdered milk and water-set the controls and push a button. A timer can be used to bake bread overnight so that it is fresh in the morning. A Matsushita spokesman said that because only Japanese companies now make the machines they are perfect for export, as there is no overseas competition and no chance of causing trade friction by cutting into the sales of foreign makers.
(The Hindu 4 November 1987, 21)

311 Rice mill

GG Dandekar Machine Works Ltd. has introduced Combi-Mini Rice Mill. It is a one-pass rice mill that converts paddy into excellent white rice with minimum breakage. Paddy is first cleaned by a vibratory screen fitted on the feed hopper. Dehusking is done by a pair of rubber rolls made of highly durable nitrile rubber. The dehusker has a very high shelling efficiency of 96 per cent. The husk is separated by a built-in fan. The rice is polished by a jet pearler employing an air jet producing lustrous whole rice. The mill has a quiet gearless drive with hexagonal section belts. It is suitable for drive from an electric motor or diesel engines of 15 HP. This compact rice mill has a capacity of approximately 650 kg of paddy per hour. Compared to the traditional huller which gives a yield of 45 per cent rice, this modern rice mill has a very high yield of approximately 65 per cent. Another advantage of this mill is that it produces pure rice bran which is a valuable by-product containing high quality edible oil.

For further information write to: GG Dandekar Machine Works Ltd., Dandekarwadi, Bhiwandi, Dist. Thane, Maharashtra 421 302.
(Industrial Products Finder October 1987, 148)

312 Advanced metal detector for food-processing industry

An ultracompact metal detector has been developed in Britain to satisfy sensitivity requirements and space limitations in food-processing industry applications. The Metalchek detector is claimed to maintain an extremely high sensitivity to all metals. It was developed for use in the narrow space between a vertical form-fill-seal machine and the unit feeding it (such as a multiweigher), but it has been found to be suitable for use in a great variety of other food-processing and packing applications.

For further information write to: A.M. Lock & Co. Ltd., P.O. Box OL8Z, Neville Street, Oldham OL9 6LF, U.K.
(Industrial Products Finder October 1987, 166)

PACKAGING

313 Aluminium cans profitable

Direct Product Profitability (DPP) studies carried out in the USA and Australia show conclusively that the aluminium can is the most profitable of all soft drink packaging materials. Aluminium cans can generate over three times the profit of 1250 ml PET bottles when placed on equal terms. Retailers would have to sell twice as many units of 2-litre bottles, and over four times the number of 1250 ml PET bottles than aluminium can six-packs to achieve the same profit. The existing profit measure - gross margin - is totally inadequate as a guide to retailer profitability. DPP, now possible through modern scanning and computerised information systems will become the true measure of return for retailers. In today's business environment, major retailers will need to look harder at profitability by individual product and package. DPP is the new profit measure that will allow them to do so more effectively.

Free copies of the sruvey findings are now available in a report entitled Direct Product Profitability of Soft Drinks in Australia. Copies can be obtained by contacting Mr. George Unger, Executive Director, Aluminium Can Group, 214-216 Nott Street, Port Melbourne, Vic 3207.

(Food Technology in Australia 39(1), 1987, 13)

314 Bakery opts for clear film

Speedi-Bake Ltd. has chosen VCX.84, a coextruded film developed by Metal Closures Venus Packaging Ltd. for its range of 'Parisienne' part-

baked bread products. The material, believed to be the first to incorporate polycarbonate, has replaced a polyester/polyethylene adhesive laminate used previously to package the bakery's products. The film, which incorporates polycarbonate and polypropylene, is said to have a 'glass-like' clarity and attractive surface sparkle. In addition, it provides valuable cost savings. Flexo-printed in four colours, the 50 micron material is used on form-fill-seal equipment which automatically packs the frozen bread products. CVX.84 is 'stiffer' than other coextruded materials and has similar handling characteristics to adhesive laminates.
(Food Manufacture March 1987, 11)

315 Beer drinkers prefer glass: study

Australian Consolidated Industry's (ACI) study, of beer drinkers throughout Australia has "confirmed consumer's overwhelming preference for glass", according to the company. "It has reinforced the traditional appeal of glass as a beverage container - glass has the tactile, aesthetic and emotional qualities which make it the preferred choice", Mr. Terry Mott, alcoholic beverages manager, ACI said. Where aluminium cans were preferred, it was for pragmatic reasons and where 750 ml glass bottles were preferred, it was for reasons of economomy and sharing.
(Beverage & Food World April/June 1987, 44)

316 Testing CO_2 content of packs

A typical quality control function demands that the atmosphere in sealed packs is tested to ensure that the correct gas mix is present. Thus, the CO_2 content often needs to be known, especially when checking multi gas atmospheres injected into packs by automatic wrapping machines. To carry out such testing, the Servomex PA404 infra red gas analyser is now available. This unit has been specially adapted to measure low volumes of CO_2 in food or drink packs. A standard medicaltype syringe is used to obtain a gas sample from the pack, according to Servomex, who are to be found at Crowborough, Sussex.
(Food Trade Review July 1987, 344)

317 Pouch sealing machines

Plasto Pack manufactures various models of pouch sealing machines suitable for sealing bags of heat sealable materials, such as polythene, polypropylene, HMHD, BOPP and various laminated materials such as glassine poly, metallized polyester poly, and aluminium foil. Various models in hand-, foot- and pneumatic-operated versions are available for packing products such as pharmaceutical, food items, spice powders, sweetmeat, grocery, vanaspati, oil, etc. The machines are of sturdy construction and have electronic timer and heat control adjustments to seal pouches of different types and thicknesses.

For more details write to: Plasto Pack, No.7&8 Mugappair Road, Madras 600 050.

(Chemical Products Finder October 1987, 135)

318 Multiwall paper sack

B&A Sacks propose to manufacture multiwall paper sacks for tea packaging, with technical know-how from DRG Sacks of U.K. The product is essentially a paper bag made from extensible kraft paper, comprising three to five layers of paper to carry 50 kg of tea per bag. Each layer or wall is properly nested or fitted within the next. Thus each wall bears its proportionate share of the load and all the walls contribute to a combined total of flexible strength. The innermost ply is laminated with LDPE and/or aluminium foil and the outer layer is wet strength - a treatment to withstand dampness. The outer ply is coated with a special compound for roughening the surface to prevent sliding of the bags. Sacks are basically of two types-open mouth and valve type. They are further differentiated by gusset, pasted and sewn types. Weighing 800 g, the sack is easy to handle and can be containerised. The sacks will have on-line two-colour flexographic printing for food product display. One can ask for natural kraft colour or even bleached.

For more details write to: B&A Sacks Limited, 113 Park Street, Calcutta 700 016.

(Chemical Products Finder October 1987, 78)

319 Sardines packed in retort pouches

There are no significant differences in fibrocity, succulence and toughness of sardines when packed in retort pouches and stored at three different temperatures, 4 C, 30 C and ambient temperatures. However, investigations proved that the flavour of the samples kept at 4 C is significantly inferior to that of the other samples, says Dr. Gopakumar of CIFT. Twentyone panelists of Beverage Crops and Miscellaneous Section, on the Sensory evaluation were asked to evaluate pouched sardines for organoleptic properties such as fibrosity, texture, succulence and over all acceptability. The majority of the panel members observed that the fish stored at 4 C showed development of rancid flavours.

Chemical analysis of the samples showed little difference between samples as regards proximate composition. Pouches stored at 30 C contained more fluid volume when it was measured. The solid contents were in good condition. Pouch to pouch variations due to the different composition of the fish may account for all the differences observed. The sardines were packed in the Metal Box Research Laboratory, at Wantago, U.K. They are to be shipped to India for undertaking test marketing.
(Beverage & Food World 14(1) 1987, 100)

320 Packaging for ghee

Ghee during storage undergoes chemical changes. The net effect of these chemical changes is oxidative deterioration and is catalyzed by air, light, temperature, humidity, metals, etc. Thus, packaging materials,used has an important role in the storage of ghee. In general, commercial ghee is packaged in tin containers. Tin packaging has certain limitations; a large capital outlay for the equipment and the additional distribution costs involved in carrying the deadweight of the tin containers. The dairy industry has shifted towards polyethylene packages because of low cost and easy handling.

Ghee samples were packaged in tin and polyethylene packages and stored at 37 C for 195 days. Samples were analyzed every other week for five traits viz. free fatty acids (FFA) level, peroxide value (PV), total carbonyl content (TCC), moisture content (MC) and flavour score (FS), Ghee packaged in tin had higher average FFA, PV, TCC and MC as compared to ghee packaged in polyethylene. In contrast to results of various chemical parameters, ghee in tin packages had a higher average level of FS as compared to ghee packaged in polyethylene. However, differences in FS became almost negligible at the end of the storage period. Though a strong recommendation can not be made, yet keeping in view the results of chemical parameters, negligible flavour differences at the end of the storage period, involvement of low cost and easy handling, polyethylene packages should be preferred to tin packages for storage of ghee.

(J. of Food Processing & Preservation 11(1), 1987, 25-30)

ANALYSIS

321 Chromatography analyzer

The Trilab 2000 features four simultaneous channels, full graphics display, data and program storage on mini floppy disks or cassette, BASIC, and a high speed, high resolution printer-plotter. Data are acquired through voltage to frequency converters, giving high accuracy and a high dynamic range to each channel. Specialised digital electronic techniques ensure that the data from all the chennels can be stored directly in random access memory.

For further information write to: Trivector Scienfitic Ltd., Sunderland Road., Sandy, Beds, SG19 1RB, U.K.

(Industrial Products Finder August 1987, 12)

COMMERCIAL INTELLIGENCE

PRODUCTION (RAW MATERIALS)

322 Statewise estimates of production, 1985-1986

	Bajra (in tonnes)	Jowar (in tonnes)
Andhra Pradesh	2,18,700	11,20,800
Bihar	6,687	5,800*
Gujarat	6,34,900	3,54,900
Haryana	3,17,000	28,000*
Himachal Pradesh	-	154*
Jammu & Kashmir	6,194	99*
Karnataka	2,16,518	13,32,274
Kerala	-	765*
Madhya Pradesh	90,000	18,16,200
Maharashtra	4,19,800	39,22,700
Orissa	10,141	34,995*
Punjab	27,000	-
Rajasthan	7,30,967	3,74,987*
Tamil Nadu	3,67,574	6,92,835*
Uttar Pradesh	6,33,404	4,33,861
West Bengal	133	121*
Dadra & Nagar Haveli	-	569*
Delhi	1,863	3,771*
Goa, Daman & Diu	374	-
Pondicherry	2,340	-
All India	36,83,595	1,01,22,831

* Kharif production

(Agricultural Situation in India June 1987, 221-228)

323 Tea output at new high

Tea production in the country till September this year reached a new high of 493 million kg following a favourable weather in the major tea producing areas as compared to 459.5 million kg produced during the corresponding period last year. According to official sources the September production of 94.9 million kg included north India's contribution of 84.8 million kg and South India's 10.5 million kg. North's production also soared to 387.8 million kg against 356.7 million kg produced last year. Darjeeling also showed a marginal increase by producing 9.2 million kg against 9.1 million kg last year. Production of tea from south till September was recorded at 105.2 million kg against 102.8 million kg.

(Financial Express 11 November 1987, 1)

EXPORT

324 Exports of spices from India during 1985-86

(Quantity: Metric tons - value: '000 Rs.)

Commodity	1985-86 Quantity	Value
Pepper	37619.62	1724848.83
Cardamom (Small)	3271.84	534599.25
Cardamom (Big)	382.97	18105.31
Chillies	1241.06	20202.88
Ginger	6816.27	108935.46
Turmeric	8561.74	120944.10
Curry Powder	2527.22	36635.88
Coriander	1863.72	16006.38
Cumin	1060.55	16570.14
Celery	2625.43	30681.72
Fennel	1324.77	10631.11
Fenugreek	2393.85	9889.78
Garlic	2619.01	13566.38
Cassia	233.03	1894.66
Mace	1.00	33.97
Nutmeg	1.15	52.26
Aniseed	0.05	1.21
Tejpat	90.59	261.55
Misc. Spices	1464.67	12643.05
Oils of Spices	49.87	49125.99
Oleoresins of Spices	352.16	99578.43
Total species	74500.57	2825208.34

(Indian Cocoa, Arecanut & Spices Journal 10(1) 1986, 3rd cover page)

325 Cashew exports rise by 48 pc

India's exports of cashew kernels grew by 48 per cent during January-May, 1987, compared to the corresponding period last year. According to official sources, exports in the first five months of the current calendar year totalled 13,708 tonnes against 9,272 tonnes last year. In value terms, realisation at Rs.117.8 crore increased by 72 per cent. Unit export price realisation has also been higher in the current year at Rs.85.91 per kg compared to Rs.73.90 per kg in the previous year, showing an increase of 16 per cent. The upsurge in offtake by the United States continued for it imported 4,244 tonnes of cashew kernels during January-May 1987 compared to 2,310 tonnes in the previous year. Exports of cashew kernels were also higher to the United Kingdom (572 tonnes against 177 tonnes), the Netherlands (2,262 against 2,024), Spain (1,438 against nil), Canada (217 against 35), West Germany (196 against 121), Poland (428 against 30), Hong Kong (487 against 357), and New Zealand (142 against 82).

Imports of raw cashewnuts touched 13,783 tonnes in January-May 1987 against 9,112 tonnes last year. The average unit import price was Rs.15,663 per tonne in the current year compared to Rs.12,960 per tonne last year.

(Deccan Herald 30 August 1987, 15)

326 Cardamom export declines

Export of cardamom during the first five months of the current financial year showed a 74 per cent decrease in quantity and 75 per cent in value as compared to the corresponding figures the previous year. A quantity of 144 tonnes of cardamom worth Rs.1.78 crores was exported during April-September 1987-88 as against 546 tonnes valued at Rs.7.25 crores during the same period in 1986-87, according to Cardamom Board sources. However, in September, 22 tonnes of cardamom valued at Rs.29 lakhs was exported as against four tonnes valued at Rs.3 lakhs during the same month in 1986. Export of cardamom (large) during the period was 85 tonnes valued at Rs. 39.19 lakhs with a unit value of Rs. 46.10 per kg as against 89 tonnes valued at Rs. 43.68 lakhs with a unit value

of Rs.49.21 per kg during the corresponding period in 1986-87, the sources added.
(Financial Express 26 November 1987, 8)

327 Export duty slashed

India has slashed its coffee export duty from Rs. 6,000 ($472) to Rs.3,300 ($260) a tonne. The move is in response to fears of increased competition in the market following the failure of the ICO to agree terms for export quotas. India has a large exportable surplus for the year 1986/87. The crop is estimated to have reached 170,000 tonnes and the home market absorbs, at most, 70,000 tonnes. According to the Coffee Board chairman, S.K. Warrior, India will not go back on its demand for a higher global quota. The continuation of the country's allotment, 39 per cent of its exportable surplus, was, said Warrior, "Unacceptable to us." India has repeatedly asked for a quota of 65,000 tonnes as against its present quota of 39,000 tonnes, according to sources.
(Coffee & Cocoa International 14(3), 1987, 16)

328 Sharp rise in groundnut extractions exports

Exports of groundnut extractions recorded a smart rise to Rs.53.75 crores in 1986-87 from Rs.28.25 crores in 1985-86. Bulk of the exports were directed to Poland (Rs.44.56 crores), followed by Czechoslovakia (Rs.7.75 crores) and East Germany (Rs.1.16 crores). India is the largest exporter of groundnut extractions in the world. In 1975 India exported 5.79 lakh tonnes of groundnut extractions and accounted for 54 per cent of the world exports of that commodity. By 1986 exports dwindled to 2.31 lakh tonnes and the share in world exports to 44 per cent but still India held its top position among the exporter of the world.
(Commerce, August 22-28, 1987, 24)

329 Export of marine products

Marine products constitute an important segment in India's export market as a major foreign exchange earner. India is ranked first among the top ten shrimp producing countries in the world. India is also ranked at present seventh among the fishing nations of the world as far as fish production is concerned. It is estimated that about fortyfive percent of the total fish production in the Indian Ocean is by India.

Exports of marine products from India have increased to 22,060 tonnes, valued at Rs.1082.7 million in the first quarter of the current financial year (April-June) from 18,278 tonnes worth Rs.939.5 million in April-June, 1986. Exports to Japan, USA, France, Spain, Singapore and Malaysia have increased substantially. Japan, which is the largest buyer of Indian marine products, mainly shrimps, has purchased 7,818 tonnes valued at Rs. 606.7 million in April-June this year as against 7393 tonnes valued at Rs. 568.6 million in the corresponding period of 1986. Exports to USA have gone up from 3,038 tonnes worth Rs. 161.6 million in April-June, 1986 to 4,100 tonnes valued at Rs. 214 million in the same period this year.

Exports of marine products to France, UK, Singapore and Malaysia in April-June, 1987 have amounted to Rs.46.9 million, Rs.69.4 million, Rs. 22.3 million and Rs. 9.59 million compared to Rs. 24.9 million, Rs.69.1 million, Rs.19.5 million and Rs. 3.9 million respectively in April-June, 1986. Barring UN, exports have increased in quantitative terms also in all the three markets. There has been an appreciable increase in exports to Spain which have been stepped up from a level of Rs.409.9 million in April-June, 1986 to Rs.15.7 million in the corresponding months this year, with the quantity exported also rising from 295 tonnes in April-June, 1986 to 609 tonnes this year. Exports to FRG, Kuwait, Bahrain and Greece have also increased substantially.

Marine products are among the 14 thrust areas identified by the government for export promotion. In 1986-87, export earnings from marine products, for the first time, crossed the Rs.4,000 million mark to touch a level of Rs. 4,606.7 million, While the quantum of export also witnessed a marginal growth of 2,62 percent over the previous year, the average unit value realisation increased substantially from Rs.47.58 per kg. realised in 1985-86 to Rs.53.66 per kg. in 1986-87. The fact that the major items of exports like frozen shrimps, frozen squid, frozen cuttlefish, frozen fish, etc. were able to realise better prices abroad was the main contibibutory factor to this growth in export earnings while the increase in the landings of squids and fish was the reason for the increase in quantity exported in 1986-87.

(Economic & Commercial News 17(39), 1987, 3-4)

MARKET & TRADE INFORMATION

330 India top rice bran oil producer

India has emerged as the largest producer of rice bran oil in the world with a sustained increase in production. Rice bran oil production totalled 2.55 lakh tonnes in 1986-87, as against 2.17 lakh tonnes in 1985-86. What is heartening is that the production of edible grade rice bran oil rose sharply from 32,834 tonnes to 94,886 tonnes during the same period. Judging by the present pace of production in edible grade rice bran oil a level of 1.50 to 1.60 lakh tonnes may be reached during the current year. The improved performance is mainly due to the assiduous efforts of the processing industry, which has been in response to the encouragement given by the government in the latest budget by way of a substantial rebate of Rs.6,500 per tonne in excise duty for use of edible grade rice bran oil in vanaspati production. This was apart from other measures taken for up rading the quality and quantity of raw/parboiled rice bran.

(Chemical Industry News, June 1987, 80)

331 Technology Council

A technology information, forecasting and assessment council will be set up by the Central Government under the Department of Science and Technology. It will be an autonomous organisation.

(Chemical Products Finder May 1987, 103)

332 R&D cess from December

The government has decided to impose a five per cent cess on all payments for the import of technology from December 1, 1987. A finance ministry press release today said that the levy known as research and development cess, has been notified under the Research and Development Cess Act, 1986. Under this the government has already formed a venture capital fund which will come into force from December,1, 1987

(The Economic Times 16 October 1987, 1)

333 National Equity Fund set up

The Union Finance Minister, Shri Narayan Datt Tiwari, told the Parliament on August 7 that the Government has decided to set up a National Equity Fund which would provide seed capital assistance to small entrepreneurs in the rural areas of the country as well in urban areas with a population below 5 lakhs. The assistance under the cheme will be available not only for establishing new projects but also for the purpose of rehabilitation of small viable sick units under the given criteria.
(Laghu Udyog Samachar, September 1987, 15)

334 Solar power in India

With the production of one megawatt of solar photovoltaic energy in 1986-87, India has emerged as the third largest producer of this energy in the world. The Government's policy coupled with the efforts of companies, Central Electronics Ltd (CEL), Bharat Heavy Electricals Ltd (BHEL) and Rajasthan Electronics and Instruments have made this achievement possible. The US ranks first in this field with a production of 3.8 megawatt and Japan is second with 1.2 megawatt.
(Industrial Products Finder, September 1987, 35)

335 New alcohol and molasses policy

Upward revision of alcohol and molasses prices, increased excise duty on molasses, differential pricing for industrial and potable alcohol, and relaxation of the ban on manufacture of potable alcohol from non-molasses raw materials are the highlights of the new alcohol and molasses policy. The new policy which continues the existing control on distribution and pricing of molasses and prices of alcohol will come into effect from October 1. The revised Molasses Control Order and Ethyl Alcohol (Price Control) Order are expected to be issued by the end of this month. The price of sugar molasses - grade 1 - is being doubled from Rs.60 per tonne to Rs.120 while the prices of khandsari molasses is being raised to Rs. 180 per tonne from the existing price of Rs.90. Simultaneously, the molasses storage fund is being wound up in view of adequate storage capacity having already been built up.
(The Economic Times, 8 September 1987, 1)

336 Manufacture of milk products and malted foods

Government have reviewed the policy of licencing of units for manufacture of milk products and malted food. It has been decided that priority for establishing further capacity for the manufacture these products should be accorded to the co-operative and public sectors. Keeping this basic objective in view revised guidelines for licencing of such units have been formulated, the details of which are as follows:

I. In the areas covered by Operation Flood:

a) No application for setting up of a new unit in private sector in areas covered by Operation Flood (including Operation Flood III) shall be entertained.

b) Application for expansion in the capacity of an existing unit in the private sector in areas covered by Operation Flood may be considered only where, in the assessment of the State Government concerned, the proposed expansion will not adversely affect the functioning of the cooperative milk plant(s) already set up or under construction in the area. The increased capacity to be sanctioned will be based on the availability of milk, subject to a maximum of 5% increase per year over the existing licensed capacity from the year in which the existing capacity was licensed.

II. In the areas not covered by Operation Flood:

In areas outside Operation Flood, preference will be given to applications from co-operatives or public sector units, but in case no suitable application from either of these sectors is pending, applications from private sector units may be considered.

III. Conditions to be imposed at the time of grant of a licence to a private sector unit for new or expansion of capacity:

The grant of licence to a private sector unit for new or expansion of capacity will be subject to the following conditions:

i) The plant will not be permitted to procure any milk from areas outside its demarcated and specified milk shed, except with the prior written permission of the State Government.

ii) Where, it becomes necessary to permit the unit to procure some quantity of milk from outside its own demarcated and specified milkshed, and from the Milkshed of a cooperative unit because of the inability of the latter to procure all the milk offered in its area, the private sector unit will purchase the raw milk only through the concerned Cooperative Milk Federation/Union at a price to be mutually agreed between the two parties. In the absence of an agreement, the private sector plant will pay the price at which the Cooperative Union/Federation sells milk to other Cooperative Unions/Federations.

iii) Even within the milkshed area demarcated and specified for the private sector unit, it will procure milk from cooperative(s) concerned within the area to the extent they are able to offer milk.

iv) The private sector unit will refrain from production of any specified products of its licensed capacity during the lean season if it is so directed by the State Government. This particular stipulation is applicable to units in the cooperative/public sector also.

(Kaigarika Varthe August 1987, 4-5)

337 Status survey of spices to be completed soon

The status survey of spices grown in states conducted by the spices board is expected to be completed by the end of this year, according to board chairman K.M. Chandrasekhar. Teams of technical officers, and those belong to the marketing department of the board had visited Maharashtra, Goa, Gujarat, Rajasthan, Orissa, Andhra Pradesh, Tamil Nadu and Kerala. They studied the situation in relation to turmeric, chillies, pepper, cummin seeds, coriander and ginger. They visited all major markets and contacted the growers traders, and government officials in all these states.

(The Economic Times 27 November 1987, 10)

338 DGTD registration for 50-100 worker units

The Union Industry Ministry has allowed industrial units engaging between 50 and 100 workers with or without the aid of power to be registered with the Directorate General of Technical Development (DGTD) which may grant registration after scrutiny of the applications. It has also been decided that small-scale units engaged in the manufacture of reserved items with employment between 50 and 100 workers with or without the aid

of power can also register themselves with DGTD or any sponsoring authority after crossing the investment limit of Rs. 35 lakhs.
(Financial Express 27 November 1987, .1)

FOOD REGULATION, QUALITY CONTROL AND HYGIENE

339 New regulations on shelf life of food products in Saudi Arabia

The Saudi authorities have recently enforced new shelf life regulations in respect of certain food products. One of the affected items was canned fruit pulps which were equated with packed fruit juices and drinks (having an expiration period of only 9 months) and not with canned foods and vegetables (which have a shelf life of 18 months). The Indian Embassy and several Indian organisations have approached Saudi Arabian Standards Organisation to reconsider the shelf life of canned fruit pulps and this is said to be under consideration.
(Cashew Bulletin July 1987, 18)

340 New export-import rules in Iran

The Majlis passed its first reading the Export-Import Regulation Bill. According to the Article I of the Bill import of any type of goods would have to be made under the new legislations provisions. Article 2 stressed that engagement in importation and exportation of goods on a commercial basis would only be possible by a trade card. Article 3 defined the trading goods into 4 categories of authorized, conditionally authorised, unauthorised and forbidden. Import and export of authorized goods may be done in observance of the regulations. To engage in trade of nonauthorized goods a permit would be required from the government organisation concerned. Non-authorized goods are those whose trading would be banned by the government for a certain period. Forbidden goods are those whose trading are forbidden by law or by Islam.
(Cashew Bulletin July 1987, 18)

341 Irradiated sausage and fish ruled safe for human consumption

Irradiating Vienna sausages and processed fish meat using Cobalt-60 as a gamma ray source is safe and helps preserve product life without

affecting taste. This finding was reported by an inter-agency group of government and university officials to the Japanese Atomic Energy Commission in December 1986. This clears the way for food processors in Japan to formulate and submit specific plans to the Ministry of Health and Welfare for irradiating these products. Japanese Government officials and University researchers have determined that 300 and 500 Krads are optimal levels for fish products and the sausage respectively. Tests revealed that untreated fish cakes those not irradiated (or irradiated at only 100 Krads), and not treated with preservatives and sterilizers, harbour eight kinds of microflora. Irradiation at 300 Krads, however, killed staphylococcus and aeromonas in the sample products, and reduced generation of penicillium and cladosporium on wood plates (on which the cakes are placed). The cakes can stay fresh for at least 20 days (twice as long as non-irradiated products). Vienna sausage processed at 500 Krads in nitrogen gas, remains germ-free for eight days, about 3 times as along as non-irradiated and plastic-packaged products.
(Beverage and Food World April/June 1987, 44)

HYGIENE

342 Booting out Bacteria

Proclean Boot Scrubber has been launched by Proclo Supplies Ltd., supplier of protective clothing and safety equipment. The unit is designed to reduce the problem of bacterial contamination from footwear in the food production and processing industry. The user places his foot into the machine, which is operated by depressing a button. Two fan jets provide a continuous spray of water on to the brushes, which scrub the boot clean. Detergent and/or disinfectant can be added to the water supply by pump. The system requires connection to the mains water supply, to the electricity supply for 240 V or 110 V operation, and to a drainage point. The unit includes a water connector, electrical flex and drainage facility. Proclo guarantee and maintain the unit for 12 months and offer a maintenance scheme thereafter.
(Food, August 1987, 18)

343 New technology streamlines poultry processing

Campbell Soup Company will market to the poultry industry a patented, new technology that greatly speeds poultry processing and could reduce the risk of contamination from bacteria such as salmonella. Dr. Richard H. Forsythe, Vice President of Campbell Institute for Research and Technology (CIRT), said the new "Minimum Time Process System" (MTPS) can reduce the tenderizing stage of broiler processing from a four to 12 hour period down to less than a half-hour. In the new process, broiler carcasses are conveyed immediately following scalding into a specially equipped room where they are electrically stimulated and conditioned for 15 to 35 minutes before moving out for further processing. At this point, tenderization is complete and birds may be cut up or cooked immediately. This allows elimination of continuous water chilling, which potentially can spread contamination from one carcass to others.

For further information contact Mr. R.L. Dake, Manager, Poultry Processing Research and Development, Campbell Soup Company, Farmington, Arkansas.

(Food Production/Management October 1987, 15)

344 Rapid test for detection of food poisoning

The Food Technology Division (FTD) of the University Department of Chemical Technology, Bombay, has developed a quick and sensitive test for the detection of food poisoning. This is a sensitive test to assess the value in the microbiological quality control of foods. The entire test can be completed within one and a half hour. Scientists of FTD have confirmed these observations on the basis of a newly developed rapid test using Ethidium Bromide to detect staphylococcus thermonuclease of the bacteria Staphylococcus aureus - which is one of the main sources of food poisoning. Thermonuclease is an enzyme which breaks nucleic acid like DNA and is heat stable. Staphylococcus aureus secretes the thermonuclease enzyme which can be detected by DNA at 10 ug-ml.

The efficacy of optimised concentration of calf thymus DNA was tested to detect thermonuclease added to meat, beef, milk, khoya and whole egg powder. Results obtained by scientists show that thermonuclease could be detected even at low levels, as there exists a clearcut distinction

between positive and negative reaction. Moreover dark zones developed were quite stable. Dr. Pushpa Kulkarni of FTD pointed out that Staphylococcus aureus serves as an index of personal hygiene. This is common to India where the absence of refrigeration facilities and the practice of cooking with naked hands - increase the possibility of growth of Staphylococcus aureus in food items.
(PTI Science Service 6(17), 1987, 4)

345 Rapeseed oil may be a carcinogen

American researchers have found that rapeseed oil may be cancer causing, according to a published report. This was one of the findings of a recent research by National Cancer Institute of Washington into cooking habits of women in China. A more significant finding reported is that prolonged exposure to smoky fumes from cooking oils, used for frying at excessive heat, is an important cause of lung cancer in China.
(The Economic Times 1 November 1987, 10)

TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES

346 Rice oil and foods

Rice oil and foods engaged in the manufacture of refined edible rice bran oil, is setting up a Rs.2.75 crores project at Kothur in Mahboodnagar district of Andhra Pradesh with an installed capacity to refine 9,000 tonnes of rice bran oil per annum. The company has obtained world acknowledged 'M scella' processing technology from Yoshino Seisakusho Company of Japan, pioneers in refining rice bran oil.
(Beverage & Food World 14(1), 1987, 120)

347 Soya milk beverage launched in Pune

A soya milk beverage "Great Shake" contained in aseptic 200 ml packs was launched in Pune recently. It is produced by Noble Soya House, and is available in three flavours - chocolate, mango and strawberry. It is being made at the company's Rs.12 crore modern plant at Mandideep, an industrial site, 20 kms from Bhopal.
(Beverage & Food World 14(1), 1987, 106)

348 Bottled coconut water to hit the market soon

Bottled coconut water will soon be introduced in the Indian market. Talking to newsmen recently the chairman of the Coconut Development Board, Mr.K. Rangegowda said a product acceptability survey had already been conducted in a few centres in Kerala, Karnataka and Tamilnadu. The know-how had been supplied by the Regional Research Laboratory, Trivandrum. Though the cost of production and capital investment had been high, the sale price of the product would be between Rs. 2 and Rs.2.50 per bottle. The bottle's shelf life would be around one month, said Mr.Rangegowda.
(The Economic Times 20 October 1987, 3)

349 Bioprocess laboratory

A bioprocess laboratory with the most advanced facilities in terms of pilot scale reactors and downstream processing equipment needed to produce biologicals will be set up as a joint venture by SPIC and the Anna University in Madras. It will be part of the Centre for Biotechnology that already exists in the university. To begin with, the laboratory, said to be the first of its kind in the country, will concentrate on bio-insecticides for agricultural use. It will translate large-scale bioprocesses for industrial applications into pilot-scale production in areas of agriculture, food and health. SPIC's contribution to the laboratory is Rs. 2.5 crore.
(Chemical Products Finder, May 1987, 94)

350 Potato processing machinery project

Recognising the growing acceptance, and hence the potential, of processed foods in India, Winner Teknology Pvt. Ltd. has secured government's approval for a collaboration with the well-known Potato Processing Machinery Ltd. of Sweden to make machinery in India for processing potatoes and like material. The manufacturing plant and laboratory being set up in Indore, Madhya Pradesh, plans to turn out 25 complete plants suited to Indian conditions in the next five years. These plants, which can process about 4.5 tonnes of raw potatoes per hour, will first be imported under OGL and then be progressively indigenised. They will cost approximately

Rs. 70 lakh to Rs.1 crore each. The company will provide total process know-how and train the operating staff.
(Industrial Products Finder, June 1987, 59)

351 Fruit and vegetable processing project

A fruit and vegetable processing plant is planned to be set up jointly by Jalans, the Calcutta-based industralists, and Parle Soft Drinks at Barasat in North 24 Paraganas district of West Bengal. Said to be the first of its kind in the eastern region, the Rs. 40 crore project will produce fruit juices and soups to be marketed in tetrapacks. The processing plant will be imported from Sweden. The capacity of the project will be 10 tonnes per day, for which 40 tonnes of fruits will have to be processed.
(Industrial Products Finder September 1987, 81)

352 Technology transfer and economic cooperation among developing countries

The United National Development Programme (UNDP) has sponsored a project called Technological Information Pilot System (TIPS) with a view to increasing trade and technology flow between the developing countries. To begin with ten countries namely: Brazil, China, Egypt, India, Kenya, Mexico, Pakistan, Peru, Philippines, Zimbabwe have been selected for this purpose. The sectors identified for cooperation and collaboration included: Agricultural machinery; Biomass; Biotechnology; Electronics; Fisheries; Food Processing; Hydropower; Pharmaceuticals; Solar energy and Textile machinery.

The Technological Information Pilot System (TIPS) is acting as a nodal point for exchanging information of these as well as other areas and sectors of interest to the enterpreneurs of the participating countries. The TIPS has its own computerised network through its national bureaux in all the ten countries. It, therefore, helps firms and companies, on the roaster of TIPS, to disseminate information relating to producats/proceses, R&D news, technology and trade opportunities. The firms wishing to circulate information about their business/technological capabilities to their counter parts in participating countries, can avail of the services of TIPS free of charge.

More informations can be had from the Director, Technological Information Pilot System (TIPS), 158, Hx, Jor Bagh, New Delhi 110 003.
(Cardamom, October 1987, 22)

353 Technology Advance Centre

A Technology Advance Centre to serve industry and government has been set up by a group of eminent retired scientists in Madras. Its field of activity will be upgradation of technology, pollution control and improving productivity. It will undertake recruitment and training of scientific personnel for industry. Cost-saving methods relating to materials, energy and personnel will be introduced. A documentation centre and a testing house are also planned. The Centre will prepare project reports for industry and do techno-economic evaluation of materials and processes. It will also hold training courses on the latest technological trends for top executives to update their knowledge.
(Industrial Products Finder June 1987, 51)

PERSONALIA

Nil

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RAW MATERIALS

1 Dehydrated green pepper

It was found that for making dehydrated green pepper, cultivars like 'Kalluvally', 'Karimunda' and 'Chetan' give a bright green product with very good flavour; and its green colour remains stable for fairly long periods.

(Spices News Letter 21(12), 1987, 21)

STORAGE AND INFESTATION CONTROL

2 Ceramic material irradiates food to maintain freshness

Fukutani (Fukuya) has developed a 'super resin' ceramic packaging material which retains the freshness in fruits, vegetables, fresh fish, meat and frozen foods by radiating far infra red rays into the moisture in food. Thisleads to the resonation of water molecules thus maintaining the freshness and ensures proper maturing.

This packaging material differs from the conventional ceramics used for industrial purposes as it has been converted into sheets so that it can be used commercially.

In the case of vegetables, the far infra red radiation causes a rearrangement of the molecular structures of the cells in the interior of the vegetable, so the dryness and yellowing can be prevented. It has also been said that fruits and the like are preserved for a long time in a ripened condition.

When this material was placed in a rice container it was found that within 12-16 hours a three per cent increase in moisture had occurred. It was said that when cooked the grains had a sheen and a delicious taste, just like that of the year's first rice crop.

At present Fukutani (1-9-16 Sakae, Naka-ku, Nagoyashi - tel: 03 666 8411 (Tokyo office)) is marketing standard size bags (200 by 300 mm, 300 by 450 mm and 400 by 450 mm) through the Tokyo Co-op under the brand name of 'Fukuchan's fresh pack'.

There is also the possibility of laminating the material with K. Nylon. Suitable areas of application for the material could include the labels and seals markets.

(Packaging News August 1987, 20)

FOOD ADDITIVES

3 Chocolate company has all-natural fruit flavoured coatings in its future

Ambrosia Chocolate Company has taken its product line beyond the realm of chocolate, using an R&D policy that encourages imagination and patience.

The Regency line of ice cream coatings was introduced early in 1987 and consists of Coronation Dark and Winter White coatings. All natural fruit-flavoured coatings and artificially flavoured coatings, still in the production stage, will be future additions to the line. This product development comes at a time when coatings are an essential part of the premium ice cream novelty market.

The all natural fruit flavours which are close to being developed should have great appeal to premium candy, bakery and frozen novelty industries. These coatings will have the allure of fruit, the appeal of "all-natural" and the current success being enjoyed by other premium products.

Ambrosia's aim is to develop a fruit-flavoured coating with a more subtle taste than currently offered to the industry. These coatings will be oil-based with suspended fruit flavour solids. These all-natural fruit flavoured coatings should have an advantage in a market where most coatings are artificially coloured and flavoured.

While Ambrosia has also started work on artificially flavoured coatings, its primary goal is to continue research, via its pilot plant, on the natural coatings. The company has provided complete lines of quality chocolates and confectionery items since 1894.

For further details write to:

Ambrosia Chocolate Company, Milwaukee, Wisconsin, U.S.

(Food Engineering International August 1987, 20)

4 Gums aid food quality

The Dow Chemical Company has recently introduced its range of multifunctional cellulose derivative food gums into the UK food industry.

Already in use in America, Methocel food gums can be applied to many different foods to aid in quality and appearance. Perhaps the most unique property the gums possess is reversible thermal gelation. When heated the gums gel and then return to their original viscosity when cooled.

In fried foods, the thermal gel structure serves as an oil insoluble shield to hold in natural juices and block oil absorption. In baking, it aids in gas retention, increasing product volume and uniformity of texture, curbs boil over and improves crust crispiness in pies. Methocel food gums can also be used as thickeners, emulsifiers, suspending agents, film formers and binders. The gums do not affect the colour, taste or calorific content of the product.

(Food Manufacture July 1987, 21)

5 Starches improve UHT products

Following a series of trials on the performance of speciality starches under UHT conditions, National Starch has developed two new products, called Thermflo and National Frigex to improve the quality of processed dairy products.

This follows an extensive two year research programme aimed at improving its modified starch line to enable the company to meet the specifications of UHT processors.

The challenge was to develop new speciality starches that not only improved texture and flavour, but also offered improved process economics. The result was Thermflow, a waxy maize starch, and National Frigex, a tapioca based starch.

(Food Manufacture July 1987, 21)

PROCESSES

6 Milk/Juice drink

A German entrepreneur has succeeded in combining fresh milk with natural fruit juices into a stable, homogeneous refreshing drink. The drink comprising the two components at a 50:50 ratio is packaged in 500 ml light weight bottles. It is rich in high value proteins, carbohydrate and calcium and contains ten important vitamins from ten different fruits. The drink is said to have undergone long term successful marketing trials in a regional market of Germany and is now being sold nationwide where it is reported to be popular with consumers of all age groups. *(Dairy Information Bulletin 4(1), 1987, 13-14)*

7 Refreshing beverage with low alcohol content

Copacabana Exotic is a new carbonated citrus drink made with a low alcohol content (6%). Zimmermann Graeff, FRG is now bringing this beverage to the national market. The product will be sold in 71 bottles with colourful labelling to depict the fruits that are used.

Copacabana Exotic is very similar to what the Americans call wine coolers. Wine coolers have done exceedingly well on the U.S. market with sales of 61 million cases last year.

For details write to: Zimmermann-Graeff GmBH & CO.,K.G.,Zell/Mosel,FRG. *(Food Engineering International August 1987, 21)*

8 New technology for palm oil extraction

The Regional Research Laboratory (RRL), Trivandrum, has developed a technique for palm oil extraction, which can considerably solve the edible oil shortage in the country. It has set up a mini-palm oil extraction mill to produce high grade palm oil, which can be consumed without further processing. Under proper management practices, one hectare oil palm, may yield up to six tonnes of palm oil per year. This can be further enhanced up to eight tonnes a hectare by tissue culture.

Raw palm oil is one of the richest natural sources of Vitamin A. One kg of oil contains 700 mg of carotenes, precursors for Vitamin A and refining and bleaching remove all the carotenes besides increasing the cost of production. The raw palm oil extracted and purified at the RRL contained less than one per cent FFA and can be used straightaway for edible purposes.

A study conducted by the RRL shows 60 per cent consumers accepted the colour. However, the consistency, flavour and degree of smoking had an acceptability level of 73 per cent, 90 per cent and 86 per cent, respectively.

Commercial cultivation of oil palm has been started in Kerala in 3,700 hectares and in Andaman and Nicobar 1,200 hectares. A detailed evaluation covering end-use properties, storage stability, nutritional studies and EST marketing is being made. A demonstration plant using the RRL technology is being set up at the CPCRI Research Centre at Palode as a national facility. The unit, which can produce 500 kg of oil a shift, can cater to the need of a 150 hectare oil palm plantation.
(Chemical Products Finder 6(8), 1988, 113)

9 Garlic oil at low cost

Nowadays, garlic oil is a household medicine used as preventive and curative medicine for many diseases. It is commonly being applied for curing gout, rheumatism, gastrointestinal problems, throat infection, cough, cold, skin and lung diseases, anti-cholestrol to prevent hypertension, etc. It improves liver functions, stimulates the heart and eliminates blood impurities. The Bangladesh Council of Scientific and Industrial Research has developed a simple process to extract garlic oil at a very low cost (US $ 0.50/100 ml).

The project on which the estimate was based indicated a maximum capacity of 800,000 bottles of garlic oil (100 ml/bot) annually in 300 working days in single shift of 8 hours. The principal machinery consists of a filter press and a crusting machine to process the final output. The estimated cost of the plant is about US $14,000.
(Technology Digest 14(1), 1987, 3)

10 Neem edible oil

Hort Court Butler Technological Institute, Kanpur was successful in refining neem oil to produce high quality odourless, colourless oil.

Without any bitter taste, which could be an important source of edible oil. The bitter components, acids and colour of neem oil had been separated to produce a tasteless and protein rich de-oiled meal which could be used as cattle feed.
(Documentation Bulletin No. 67, 1987, 8)

11 Production process for extruded fish products

A Danish firm has developed a new production process for extruded fish products. In this technique, small pelagic fish are homogenized together with flour and put through an extrusion process which leaves a semi-product with a shelf-life of years. These semi-products can be converted into fish containing pasta products, fish snacks, instant fish soups and so on. This process helps utilize small pelagic fish without loss which may exceed 30% in tropical areas. It also gives fish products with a high nutritive value. A pilot plant is in operation in Denmark since 1985. For details contact: Jutland Technological Institute, Food Technology Department, Technologiparken, 8000 Aarhus C, Denmark.
(Asia-Pacific Tech` Monitor November-December 1987, 24)

PROCESSED PRODUCTS

12 Fibre-rich bread

One of the first Canadian calorie-reduced breads has hit Ontario shelves - Dempster's Light. Corporate Foods Ltd. expects its new bread to do well with diet and health conscious consumers since the bread has only 40 calories a slice.

The high fibre level is attained through the use of FIBRIM Soy Fibre, derived from soya beans. Dempster's Light is the first Canadian consumer bread to contain this fibre, which is from a natural source containing no cholesterol and low in fat and sodium.
(Food in Canada 47(7), 1987, 12)

13 Preserves are additive free

A new range of jams and marmalades made with Mauritian raw cane sugar is being launched by the Saffron Whole Food Company.

The raw cane sugar varieties include: strawberry; apricot; black cherry; blackcurrant and peach as well as vintage orange; orange and ginger; tangerine; peel-less orange and fine cut marmalades.

Saffron Whole Food is maintaining its all fruit preserves label because the sugar contains no additives or artificial colourings. The preserves, available in 12 oz sizes, will retail for £ 1.20 for jams and £ 1.10 for marmalades.

(Food Manufacture July 1987, 107)

EQUIPMENT AND MACHINERY

14 New grain cleaning machine

An economical and portable cylindrical screen grain cleaning machine has been developed. The new machine consists of two replaceable cylindrical screens of different wiremesh sizes, a feed hopper with feed control mechanism, a blower and a drive unit. All these parts are mounted on an angle-iron frame. A suitable mechanism for changing the screen slope is also attached to the machine. The pan provided below the outer screen to receive undersize materials is vibrated with the help of a cam and connected rod. The machine is operated by 1 hp single phase electric motor. Both the screens rotate at the same speed and in the same direction. The power from the motor to the screen is transmitted through a V-belt and pulleys. The machine is portable and suitable for cleaning and grading cereals, pulses and oil-seeds. Contact: Indian Agricultural Research Institute, New Delhi 110 012.

(Documentation Bulletin No.69, 1987, 13)

15 Dehusking coconuts

The Caribbean Industrial Research Institute (CARIRI), West Indies, has developed and commercialized a simple coconut dehusking machine. It consists of a pair of spiked shafts arranged to rotate at different relative speeds. The coconut, held firmly against the shafts for dehusking, also keep rotating. Finally, the nut remains on top of the shafts while the husk goes down the machine onto a conveyor. The all-steel machine is 5'6" long,3'4" wi and 3'2" high. It is powered by a 3-hp motor and can be driven by the PTO of a tractor, or by a gas or diesel engine. The machine can turn out 300-400 nuts per hour. It takes only two to three people to mind the entire operation of feeding, dehusking and storing nuts.

For details contact: Caribbean Industrial Research Institute (CARIRI), C/o Tunapuna Post Office, Trinidad, West Indies.
(Asia-Pacific Tech Monitor September-October 1987, 23)

16 Soybean blanching unit

Central Institute of Agricultural Engineering (CIAE), Bhopal, India has developed a machine that blanches soybeans to eliminate anti-nutritional factors and make it fit for flaking and human consumption.

It is made of 22 gauge galvanized iron sheet. The fuel is burnt in the central cylinder on the removable grate. The outer cylinder is insulated by flattened asbestos rope and plaster of paris. The water is initially heated to boiling and then 20 kg soybean is poured into it. The temperature of 100 C is maintained for 40 minutes by continuously feeding fuel. The total time required per batch is about 2 hours. After blanching, the water and blanched soybean is removed by opening the gun metal valve at the bottom. The cost of the unit is Rs.900 (about US$75).
(Documentation Bulletin No.67, 1987, 8)

17 Mixers and mixer extruders

Baker Perkins SA, France manufacture mixers and mixer extruders which find applications in the production of goods such as; adhesives, coatings, colours, food related products (biscuit dough, butter, chewing gum, chocolate), pharmaceutical products, rubber compounds, and other products such as abrasive pastes, brake lining, insulation and sound proofing compounds, detergents, soaps, linoleum, floor tiles and industrial chemicals. The mixers and mixer extruders have a capacity range from 11 to 5,000 l and an installed power ranges from 2 to 350 HP. Machines are made of different materials of construction depending on the product.

For more details write to :Mascot Chemical Enterprises (P) Ltd., Mascot House, 875 West of Chord Road, II Stage, Mahalakshmipuram Extn., Bangalore, Karnataka 560 086.
(Chemical Products Finder November 1987, 67)

18 Mixing equipments

Navayug Industrials manufacture mixing equipments which run at high speeds from 750 RPM to 6,000 RPM and carry-out fast speed mixing. Made from SS 316/304, these can be fitted on pressurised or non-pressurised vessels, or reactions carried at vacuum. These can be used for mixing, dissolving, suspending, homogenising, aerating, and wet grinding in chemical, pharmaceutical, food, and paper industries. The mixing equipments are available to fit on batch process application from 50 to 3,000 litres volume. Also offered are stirring arrangements that can be fixed on reaction kettles.

For more details write to: Navayug Industrials, 23, Govt. Industrial Estate, Kandivli (West), Bombay 400 067.
(Chemical Products Finder November 1987, 74)

19 Multi-shaft high viscosity mixers

Aro-Grad Engineering has recently introduced a range of vertical multi-shaft mixers and dispersers for compounding products as thin as water or as heavy as the thickest adhesive. Heavy duty mixers in capacities ranging from 50 to 2,000 litres, disperse and process pastes far too heavy for standard single shaft machines. These multi-shaft machines handle products having viscosities in excess of 3,00,000 centipoises, with increased efficiency and speed. The mixing tubs may be jacketed for heating/cooling and may be operated under vacuum. Also available are mixers having scrapers to keep the sides of the tubs clean and increase heat transfer efficiency. Many variations of blades are available to emulsify, give extra fine dispersion, mix heavy paste or cut rubber. Applications for these mixers include paints, heavy inks, non-flow urethanes, adhesives, epoxies, sealants, plastics, tough chemicals, ceramics, grease, cosmetics and foods. Different viscosities and batch sizes or special problems can be handled.

For further information write to: Aro-Grad Engineering, 689, GIDC, Makarpura, Vadodara, Gujarat 390 010.
(Industrial Products Finder 1987 Annual, 173)

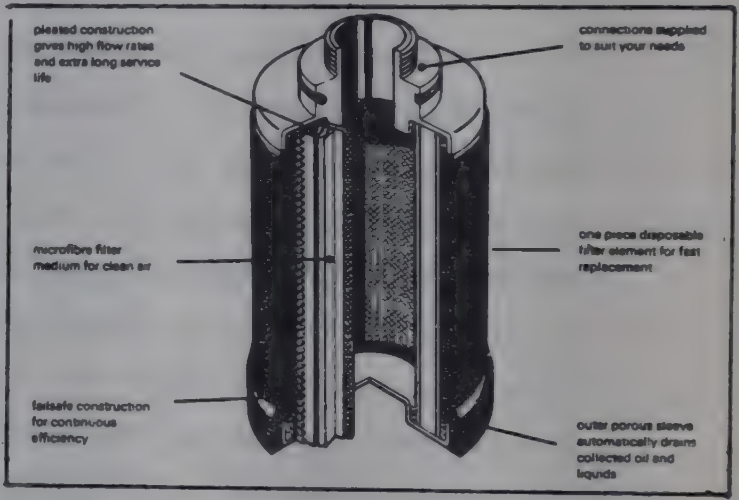
20 Magnetic stirrer

Skypharma Industries have developed a magnetic stirrer for use in pharmaceutical, foods and beverage, chemical and allied industries for stirring and preparation of mixtures and solutions. The unit is made of stainless steel and is electrically operated. Its internal components are precision made and individually inspected. Features include: extremely hygienic and tested as per GMP standards; simple to operate; contents do not spill while rotating; easy to wash and maintain; and portable and compact. The stirrer is available in 100 litres capacity with 0-1400 RPM.

For more details write to: Skypharma Industries, 78 Raja Industrial Estate, Purushottam Kheraj Road, Mulund (West), Bombay 400 080.
(Chemical Products Finder 6(8), 1988, 10)

21 Sub-micron filters

Siemag Industries, manufacturer of the popular Filter-Regulator-Lubricator, has introduced a complete range of compressed air, gas and liquid filters, hitherto imported, made with know-how from Process Scientific Innovations Ltd. UK. These high efficiency filters remove last traces of water and oil, and particles down to 0.01 micron. Normal range covers 5,1 and 0.01 micron to an efficiency of 99.99%. Siemag also manufactures activated carbon filters used for breathing quality air and odour removal duty. Made of borosilicate glass fibre web these filters are moderately priced and have long life. The filters are provided with automatic drains for oil/water condensates.


pleated construction gives high flow rates and extra long service life
connections supplied to suit your needs
microfibre filter medium for clean air
one piece disposable filter element for fast replacement
failsafe construction for continuous efficiency
outer porous sleeve automatically drains collected oil and liquids

For further information write to: Siemag Industries, R.K. Industry House, Walbhat Road, Goregoan (E), Bombay 400 063.
(Industrial Products Finder 1987 - Annual, 559)

22 Double arm mixer-cum-kneader

Samson offers the Sigma kneaders of SS-316/SS-304 or mild steel with or without jacket. The agitator blades are correspondingly made of cast steel or cast iron, available in various designs and are of heavy duty cross-section. The kneaders find wide applications in various industries including confectionery, dyes and pigments, food and plastics, pharmaceuticals, Also available are special blades designed to suit dough moulding compound and fibre glass.

For more details write to: Samson Hitech Products Pvt. Ltd., 21/13-X, Block-A, Naraina Industrial Area, Phase II, New Delhi 110 028. *(Chemical Products Finder November 1987, 3)*

23 Mini oil expellers

Elktromek Industries manufactures mini oil expellers, suitable for extracting oil from copra, groundnut, cottonseed, soya bean, etc. The machines are available in capacities of 2, 6, 20 and 40 kg per hour. The 2 kg capacity models are available in hand operated and motor driven versions, and higher capacity models in motor driven version.

For more details write to: Elektromek Industries, 6-A, 6th Main, Road, III Phase, Peenya Industrial Area, Bangalore, Karnataka 560 058. *(Chemical Products Finder 6(7), 1987, 14)*

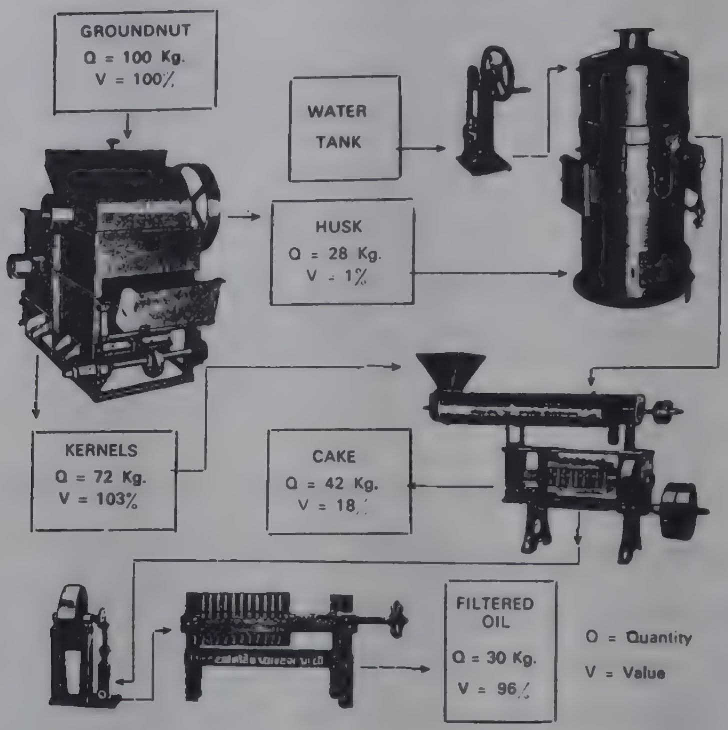
24 Tiny oil mills

Tinytech Plants Pvt. Ltd. India has developed a tiny oil mill which consists of expellor filter press, boiler, decorticator, etc. It runs on a 10HP motor or oil engine. The capacity is to crush 60 kg of oil seeds per hour. It suits edible or non-edible oil seeds and is most appropriate for rural application.

It can be installed in any village which has sufficient supply of oilseeds. It is under commercialized production in India since 1984 and over 170 mills are in operation.

The company can sell complete tiny oil mills or the technology to manufacture them to a particular country simply by charging a consultancy fee and charges for engineering drawings. All the components can

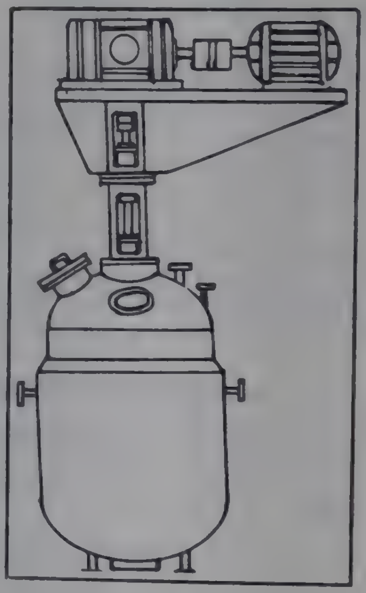
TYPICAL FLOW CHART FOR GROUNDNUT


GROUNDNUT
Q = 100 Kg.
V = 100%
WATER TANK
HUSK
Q = 28 Kg.
V = 1%
KERNELS
Q = 72 Kg.
V = 103%
CAKE
Q = 42 Kg.
V = 18%
FILTERED OIL
Q = 30 Kg.
V = 96%
Q = Quantity
V = Value

be manufactured using locally available raw materials. *(Asia-Pacific Tech Monitor September-October 1987, 28)*

25 Reaction vessel

Watrion have introduced reaction vessels and kettles, heat exchangers and various other types of chemical equipment to cater to the requirement of industries such as pharmaceutical chemical, pesticide, paint, soft drinks and breweries. Reaction vessels are made of SS 304 or any other material to suit user's specification in capacity range of 100 to 3,000 litres. The agitator can be of anchor, turbine or any other design to suit service requirements. To ensure smooth opera-



tion for days, a stuffing box with or without water cooling arrangement and a special bearing housing with self-aligning tapered roller bearing are provided.

For more details write to: Watrion Water & Filter Engg. Pvt. Ltd., 34A, Rameshwar, Four Bangalow Road, Bombay 400 059.
(Chemical Products Finder 6(7), 1987, 79)

26 Snack food extrusion equipment

Aro-Grad Engineering have introduced a complete range of indigenously developed equipment for snack and pet food extrusion to manufacture various shapes from a range of possible corn/rice/potato/soya based ingredients. The heart of the system is the extruder cooker which employs a dry extrusion process, creating heat through pressure and friction. Heat and pressure are used to cook and expand ingredients, gelatinise starch, destroy inhibitors where present and modify or sterilise by-products and dehydrate moist waste materials. With this dry extrusion process, no additional heat source is required as it relates to the extruder function, thus eliminating the capital and operating costs of boilers and driers. Also available is auxiliary equipment to clean and mix raw materials, cool extruded products, apply flavour, and to facilitate material handling.

For more details write to: Aro-Grad Engineering, 689 GIDC, Makarpura, Vadodara, Gujarat 390 010.
(Chemical Products Finder 6(8), 1988, 16)

27 Pickle filling machines

SAPFH4 provides a semi-automatic facility to fill heterogeneous foodstuffs such as pickles containing solid lumps of mango, lime, chilli, brinjal, carrot, etc. to a preset adjustable volume.

In addition the SAPFH4 will top up the filled bottles with an adjustable quantity of oil after they are moved to the oil filling station of the machine.

The standard machine handles 24 bottles of 340 cc capacity per minute leaving hardly any significant air pockets entrapped. The machine is adjustable for bottles with smaller volumes upto a maximum capacity of 500 cc.

Pickle from the stainless steel hopper is fed into measuring chambers and then expelled into the bottles via ducts by means of pistons working under air pressure.

The filling operation is so designed that in case of overloading due to jamming by solid lumps the machine will stall and thus avoid damage to the working parts. By manually dislodging the obstructing solid matter and restarting the cycle, the machine is put back into operation.

This novel filling machine affords the following advantages and benefits:

Improves productivity both at the filling and oil topping stages reducing production costs.

Both filling and oil tapping are done cleanly without wastage and overspill or dirtying the outside surfaces of bottles. This ensures that the bottles are ready for capping without otherwise doing an extra cleaning operation.

The SAPFH4 obviates the need of manually tamping out air pockets or topping up with oil and cleaning the outside surface of the bottle. Eliminating these unnecessary operations LEADS TO REDUCING RECURRING LABOUR COSTS TO ONE-THIRD. The equipment is sturdily built and affords trouble-free service with the minimum of maintenance.

Spares or optional items can be supplied when required.

Increased productivity and flexibility in coping with seasonal demands leads to phenomenal reduction in labour costs, hygenic filling operations and increased profits.

For details write to: Technovation, 4, Paramel flats, St. Cyril Road, Bombay 400 050.

28 Microwave dryer

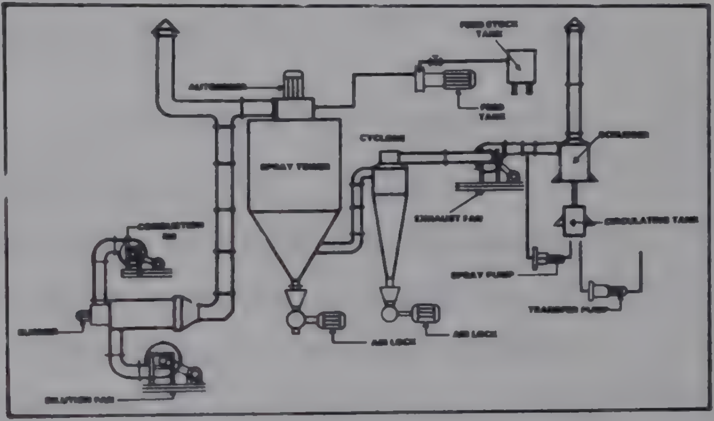
The Fitzpatrick Company has introduced a new microwave vacuum dryer designed to extend the advantages of low temperature, self-contained, microwave processing to larger production bacthces.

The new dryer, called Wavac, offers greater efficiency, shorter drying times and less wastage than conventional tray or fluid-bed dryers. Using an unusual approach to combining low-pressure vacuum, microwave energy and improved agitation (stirring), the Wavac concept also extends the performance of previous drying concepts. In addition, its complete system containment affords economical solvent recovery and eliminates the need for secondary airstream cleanup.

The Fitzpatrick Company designs and manufactures blending, compaction/densification, granulation, prebreaking, fluid-bed drying and other equipment to meet the processing needs of the food processing, plastics and other industries. The company maintains product test and evaluation laboratories in South Plainfield, New Jersey, and Elmhurst, Illinois.

For further details write to: The Fitzpatrick Co., Elmhurst, Illinois, U.S.
(Food Engineering International June 1987, 79)

29 Spray dryer



Industrial Blower Manufacturers has successfully designed, manufactured and commissioned Disc Type Atomiser Spray Dryer. Spray drying by definition is transformation of the feed from fluid state into a hot drying media. It is a continuous process. Feed can be either solution, suspension or paste. The advantage of disc atomiser is trouble-free atomisation of the feed stock by a centrifugal force created by a rotating disc. IBM's disc atomiser is corrosion and wear-proof. It is possible to design spray dryers for various products which need different residence time and different input and output moisture. The heating media is air. It can be heated directly or indirectly as per the requirement of products.

For further information write to: Industrial Blower Manufacturers, E-13 Nandjyot Industrial Estate, Safed Pool, Kurla-Andheri Road, Bombay 400 072.

(Industrial Products Finder 16(4) 1988, 146)

30 Natural circulation solar-energy crop dryer

A British-firm has developed a low-cost, natural circulation solar-energy crop dryer, suitable for Third World villages. The system consists of a 3m wide, 7m long transparent drying chamber of semi-circular cross-section, fitted with a transparent solar chimney draped internally with a solar-energy absorbing surface. Moisture from the crops is carried away by a buoyancy-driven air stream. This is a rapid drying system and the crop loss is low. There is no auxiliary power requirement. A pilot plant is in operation in Nigeria since 1984.

For details, contact: Dr.Brian Norton, Solar Energy Technology Centre, Cranfield Institute of Technology, Bedford MK43 OAL, United Kingdom.

(Asia-Pacific Tech Monitor, November-December 1987, 23)

31 Solar dryer for drying fish

The dryer consists of a PVC cover stretched over a domed tunnel framework consisting of galvanized steel conduit held rigid by internal wires. The fish are held on multiple racks within the dryer which is capable of holding approximately 20-30 kg of fish per square meter of floor area. Ventilation is provided either mechanically by fans, or by aligning the dryer in the direction of prevailing wind which is allowed to enter one end and exhaust through the other. However the efficiency of this solar dryer lies in its ability to reduce the moisture content of fish which have already been pre-dried on a drying rack.

(Documentation Bulletin No.69,1987,19)

32 A new low-heat continuous drying system to dry food on the horizon

A new low heat continuous drying system to dehydrate foods has been unveiled by Precision Drying Systems (PDS) Princeton, N.J., USA. It has developed a low heat dryer. There are already several types: freeze dryers, vacuum dryers, drum, air and spray dryers.

In the low heat dryer, food and hot air is piped into the stainless steel drying machine from opposite ends. Inside the food moves up and down continuously in a bed of spherical metal balls, which transfer heat to the food and thereby dry it. When dried the food emerges as small chunks or powder. Because the hot air is at a relatively low temperature of 100 F, essential vitamins, minerals and flavour are not lost. The new system matches is preserving the high quality of food obtained in freeze dryers, but is 50% less expensive. It has the ability to retain the integrity of substances, but is also economical.

The new system is the brain child of the Swedish inventor Eric Carlsson. The system of Carlsson was modified by Eric Rockstrom of PDS for widespread use in food and pharmaceutical industry. The new PDS system is expected to be marketed between $400,000 and $2 million depending on the size of the system. It will be cheaper in operation than the expensive freeze drying systems on the market.

(Chemical Weekly 33(13), 1987, 74-75)

33 Expansion of existing evaporators and dryers

By adopting advanced process technology and low energy consumption technique, SSP has engineered a system in the field of expansion of existing evaporating and drying plants. Plant capacity in evaporator can be increased by 300%, whereas in drier plant capacity can be increased up to 100%. In case of evaporation, plant capacity can be increased by addition of a number of effects with the benefit of reduced specific steam consumption. In case of driers, plant capacity can be increased by increasing the inlet air temperature or by addition of a second stage drier or by addition of a nozzle system. Inlet air temperature increases the heat utility efficiency by about 20%. Expansion can be carried out in the existing building with minimum space requirement. SSP has so far expanded the capacity of about 30 dairy and food processing plants throughout the country.

For further information write to: Faridabad Stainless and Steel Products Co. Pvt. Ltd., 19-DLF Industrial Area, Phase-II, 13/4 Mathura Road, Faridabad, Haryana 121 003.

(Industrial Products Finder 1987 Annual, 12)

34 Venuleth dryer

New Multifab Engineers Pvt. Ltd manufactures a wide range of direct contact dryers. These agitated vacuum type rotary dryers are called Venuleth Dryers, ideal for handling highly heat-sensitive materials, where the drying is carried out at a relatively low temperature. The Venuleth Dryer is made of a stationary horizontal jacketed drum with a rotating shaft having spiral blades connected to a suitable driving system. This specially designed vacuum dryer can handle slurry as well as cake as feed. While heat is transferred through the external jacket, the central shaft blade keeps the product in constant movement. Thus, the product along the wall is constantly replaced. This sweeping action attains higher heat transfer coefficients between the drying material and the heated interior surfaces. Due to low speed of rotation, no damage is caused to the product. Particle size of dried solid can be reduced if required with knocker bars. Specific advantage of Multifab Venuleth Dryer are: High thermal efficiency; clean and closed operation with no atmospheric contacts; minimum manpower requirement; possibility of solvent recovery; and improved products quality due to low temperature drying. It can perform as a reactor-cum-dryer, and replace conventional tray dryers, etc, with lesser operating time and minimum handling losses. The Venuleth Dryer eliminates subsequent pulverising of the product, and is available in a wide range of materials and capacities from 500 to 5,000 litres. Pilot plant testing facilities are availble at the Multifab factory to try out custom specified applications. A plot model of Venuleth Dryer of 50-litre capacity is available with complete technical assistance from the manufacturer.

For more details write to: New Multifab Engineers Pvt.Ltd., 225 Gala Complex, D Upadhyaya Marg, Mulund West, Bombay 400 080.
(Chemical Products Finder 6(7), 1987, 95)

35 High vacuum molecular distillation plant

AVC manufacture high vacuum molecular distillation plant which find applications in perfumery, flavour, pharmaceutical, fine chemical and food industries. When highly heat sensitive materials are to be processed at low temperature, high vacuum becomes mandatory which results in very good product quality besides saving in the energy inputs. The molecular distillation plant manufactured employ vacuum as low as 0.00001 mm^2, production rate up to 800 kg/hr, evaporation areas up to 5 m^2. Materials of construction include SS 304, SS 316L, and titanium. The vacuum pumps include vapour booster pumps, diffusion pumps backed by mechanical pumps. The plant is used for stripping of fatty acids, recovery of solutes from solvents, lubricating oil reclamation (without acid treatment), and vitamin A and E manufacturing. Centralised condensors, besides the external condensors are provided for the continuous separation of distillates and residues. High vacuum ball valves are used for maximum conductance. Sensitive instruments made the plant automatic in the R&D or production departments.

(Chemical Products Finder 6(7), 1987, 83)

36 Biscuit manufacturing equipment

Viçars Group of UK offers complete packages of machinery to handle every stage of biscuit manufacture: for mixing, shaping, baking, and packing 150 kg of biscuit mixture per hour. The package, designed for soft and semi-sweet, digestive and rich tea biscuits, incorporates a combined vertical and moulding machine. The company has already supplied this type of machinery to biscuit manufacturers in India.

For further information write to: Hi-Tech Systems, 80 Hardwar Road, PO IIP, Mohkampur, Dehra Dun, Uttar Pradesh.
(Industrial Products Finder 16(3), 1987, 101)

37 Soymilk plant

Soya Technology Systems Limited offers three sizes of soyamilk plants. The output of each plant depends on the protein content desired. Optimum production capacity proposed is 4000 litres per hour. Raw materials used are soybean, water, sweeteners and flavourings depending on the product. Equipment machinery cost (FOB) US$2,750,000 (approx).
(Asia-Pacific Tech Monitor September-October 1987, 34)

38 Tea processing machine developed

A new tea processing machine, "Sennova", a major breakthrough in the processing technology of CTC tea, has been launched at the Darrang tea estate in Assam, reports UNI.

The machine developed by Mr. Mohit Sen of the Tea Broker Company eliminates the need for rolling tea leaves before the CTC process.

Official sources said the new machine's output was about twice that of the conventional machine with only half its power consumption. It also cuts down the space requirement by about 70 per cent. Liquors produced by the new machine are "brighter and brisker", the sources claimed.

Describing the machine, the sources said, Sennova has four 30 inch-wide processing units placed at tandem, each fitted with the Sennova dejamming device. The new machines are also fitted with 17.5 inch-diameter drums instead of the eight-inch-roller of conventional machines.

(*The Economic Times* 25 February 1988, 12)

39 Solar tea boiler

A solar tea boiler has been designed, developed and tested at the Central Arid Zone Research Institute (CAZRI), Jodhpur, by N.M. Nahar, a scientist in the Division of Wind Power and Solar Energy Utilization

The device can be successfully used for preparing 125-150 cups of tea per day in office canteens, road side tea stalls and restaurants.

The device can also be installed on a moving four wheeler hand cart and tea can be served at various places so that it will generate employment and will conserve lot of commercial fuel.

The device consists of a flat plate collector and a container for water and milk. The flat-plate collector is made from copper tubes. The diameter for riser is 12.5 mm and for header is 19 mm. The distance between two risers is 100 mm and an aluminium sheet is wrapped over these and fastened tightly with galvanised iron wire. The absorber area is 0.9 m^2. It is encased in a painted mild steel tray with 75 mm bottom resin bonded fibreglass insulation. Maxorb solar foil is fixed over it as selective coating having solar absorptance 0.97 and thermal emittance 0.11. One clear window glass (4 mm thickness) is fixed over it. If maxorb fo is not available then it can be painted by mat finish black board paint and two glass covers used instead of one. Arrangement has been made to change the tilt of flat-plate collector on 1st and 15th day of each month so that maximum solar radiation can be obtained through out the year. The bottom of flat-plate collector is connected with water and milk container and tap is connected at the outlet of the collector. When tea is required, the tap is opened and instant boiled water and milk can be obtained. After mixing tea and sugar, tea can be served.

The device was tested for boiling of water and milk. The boiled water was collected every ten minutes from the device and observations were recorded from 10 AM onwards on clear as well as on cloudy days. The efficiency of the device was found to be 34.2 per cent.

On an average the device can be used to boil 16.5 litres of water and rise in water temperature was observed to be 65 C. The operating temperature being 95 C or more. It has been observed that 300 clear sunny days are available in most parts of India. Accordingly fuel-saving calculations show that the device saves 677 kg of firewood or 492 kWh of electricity or 169 kg of coal or 78 litres of kerosene. The cost of the device is Rs.1000/- which can be recovered within 2.5 to 5 years depending on the fuel which it replaces.
(PTI Science Service 7(4), 1988, 7-8)

40 Snack foods flavoured/oiled simultaneously

A spraying unit, which applies oils and flavours simultaneously to savoury biscuits and potato-starch-based snack foods, has been developed by a British company. The machine obviates the extra handling and quality control problems that can occur when products are oiled online and then flavoured offline in tumblers; it also reduces costs by ensuring an even thickness of coating and is not subject to feed-pipe blockages. The unit is designed for high-speed automatic processing lines with capacities of up to 1,000 kg of extruded products an hour. Pre-blended mixtures of oils and flavourings are sprayed on to the products through spinning discs mounted above and below a variable-speed conveyor.

For further information write to: Arcall Ltd., 1 Westminster Road, Industrial Estate, Warcham, Dorset BH20 4SR, U.K.
(Industrial Products Finder 1987 Annual, 395)

41 Starch extraction technology

As a long time innovator of process technology in the starch industry, Westfalia Separator, Oelde, FRG, has planned the introduction of new techniques and processes for economic starch extraction at the Starch Conference 87 in Detmold, RRG. The company's goal is to provide processors with optimum raw material yields together with a reduction in waste-water.

According to Westfalia, processes have been developed for the production of potato starch, corn starch and root starch which meet the highest technological requirements. Separators and decanters play key roles in these processes.

Decanters are used to process suspensions with very high solids contents. In the extraction of starch from tubers such as potatoes and manic, they perform the following functions: fruit water separation, pulp de-watering, and potato protein recovery. When processing cereals such as corn, wheat and rice, their functions include: gluten-starch separation, gluten de-watering, classification of A-starch, concentration of B-starch, de-watering bran and fibers.

The use of a decanter is advantageous for downstream equipment as regards water consumption and starch quality. Depending on the process sequence and the potato protein installation, 65-90% of the protein and fruit water is recovered at the beginning of the production process.

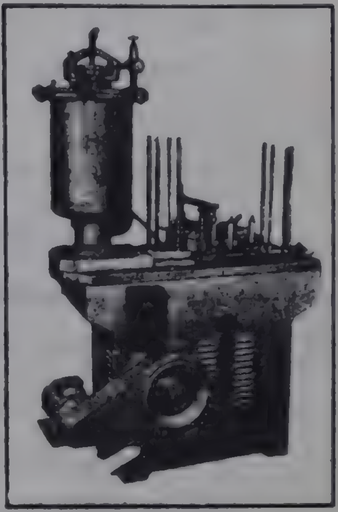
The ejected concentrate is discharged continuously through nozzles fitted at the periphery of the bowl. In the case of separators equipped with an annular valve, total de-sludgings can be carried out in addition to the continuous nozzle discharge.

If the separators are equipped with a recycling device, part of the concentrate can be recycled back into the bowl directly in front of the nozzles. The clarifying efficiency of the disc stack is thereby not impaired. Even in the case of fluctuating feed conditions and a low solids content, the maximum solids concentration for the particular product can be achieved.

With nozzle bowl separators featuring a washing device, the soluble and insoluble protein is separated from the starch. The concentrate is washed with fresh water or process water.

(Food Engineering International June 1987, 76)

42 Can end solutioning machine



Recon-has introduced an automatic can end solution machine. By applying a latex based compound on the can's bottom and top, the machine ensures the hermetic sealing of a can. The curled components are stacked in a magazine which get automatically transported to a spinning chuck rotating at 500 RPM. The solution stored in a pressurised tank flows to a nozzle, which opens by a cam-operated needle to allow the solution to drop into the channel of the spinning can end. Then the solutioned can end is again transported to a magazine which gets stacked up for easy removal. It can be used for solutioning components of 202 to 700 mm dia with additional change parts. The machine can also be modified to apply PVC compound to RO and lug caps of different sizes.

For further information write to: Recon Machine Tools Pvt. Ltd., 37 Sarvodaya Industrial Estate, Mahakali Caves Road, Andheri (East), Bombay 400 093.

(Industrial Products Finder 16(2) 1987, 15)

43 Reclosable roll-on caps for aerated beverages

New roll-on pilferproof aluminium caps with a plastisol flowed-in gasket can now allow even aerated beverages to be capped with a reclosable feature. This new capping system from Metal Box does not require any opening device as opposed to crown-corks. It is particularly suitable for synthetic aerated beverages which require high gas pressure retention, or beer which requires pasteurisation after bottling, or hot-filled products like ketchup which develops vacuum on cooling, or pure fruit juices and still drinks which need boiling water processing after hot filling. These caps, known as Coronet caps, are best suited for take-home, multi-shot, large capacity glass, or light weight PET bottles. At present, Metal Box manufactures Coronet caps of 28 mm diameter only and can offer these printed to customers' designs along with the machine changeparts for sealing the caps on to glass bottles.

For further information write to: Metal Box India Limited, Post Box 1169, 114 Elaiy Mudali Street, Tondiarpet, Madras 600 081.
(Industrial Products Finder 16(3), 1987, 185)

44 Instant tea/coffee dispensers

Park Trade Corporation offers instant/tea coffee dispensers adapted to Indian conditions. Called the Hot Pot Integra Tea/Coffee Vendors, they can make, store, and serve ready made tea brew and warm milk, or hot water and warm milk to make tea (with tea bags or batch tea in kettles), and instant coffee. Several models having different capacities are available. An attachment is also available for those who would like to have reboiled (Ookaro) tea.

For further information write to: Park Trade Corporation, 1107 Arcadia, 195 Nariman Point, Bombay 400 021.

PACKAGING

45 Modifiers approved for food contact applications

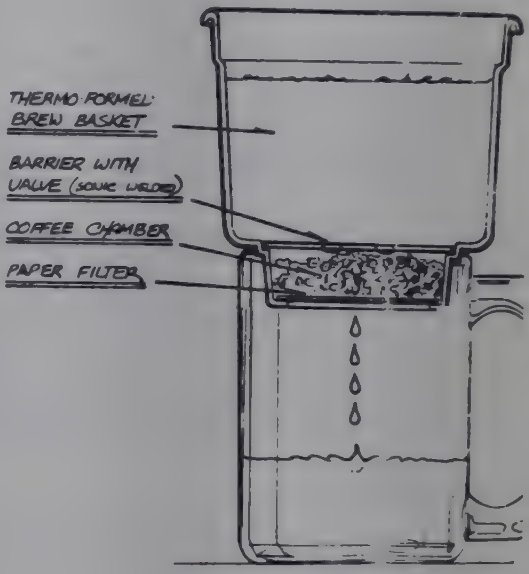
The vast majority of the Baymod A range of ABS and SAN modifiers for PVC and other plastics, produced by Bayer AG, West Germany, have now been approved for food contact applications throughout Europe. The grades

in question are to be designated with an additional code letter F (= foo
Applications include film and thermoformed articles for packaging jam an
margarine.

For further information write to: Jagat Chemicals Private Limited,
Express Towers, 17th Floor, Nariman Point, Bombay 400 021.
(Industrial Products Finder 1987 Annual, 239)

46 One-cup coffee package designed for microwave

Micro-cup, a drip-type disposable package that makes a single cup of fresh-brewed coffee in microwave ovens, has been developed by Innovations and Development Inc. (IDI), an Edgewater, N.J. product development and package design firm.



According to Gary Grossman, IDI president, Micro-Cup provides a low-cost, time-saving alternative to instant coffee and gives consumers a choice of various types of coffee including decaffeinated.

The thermoformed brew basket, placed directly on a cup or mug, has two chambers - an upper reservoir for water and a lower chamber for fresh ground coffee. A non-toxic substance separates the two areas and serves as a valve. When the water reaches 190 F (less than 2½ minutes in a 600-watt microwave), the valve melts allowing the water to extract the coffee and pass through the filter into the cup below. Within minutes, a freshly brewed cup of coffee is ready for drinking and the entire filter package can be disposed of. The brew basket is made a microwave safe material.

After the coffee is brewed the entire Micro-cup filter package can be discarded.
(Packaging 32(13), 1987, 31)

47 Portable food packaging machine

This portable packaging workstation can generate 95% vacuum to protect vitamins, aroma, and flavour while preventing molds, aerobic bacteria, and effects from humidity and insect infestation. It is especially suitable in tropical countries for preventing mold in the stored food. All types of food, medical supplies, chemicals, seeds, instruments and weapons can be vacuum packed in plastic pouches, or in glass jars or containers with this unit. It weighs only 27 kg and can be wheeled to any place and requires no setting time. It is priced at US$1125 per unit and can be obtained from: H.G.Stenger Sandhof Corp, Dept. C.N.,299 Madison Ave, #402 New York, New York 10017, USA.
(Technology Digest 14(1), 1987, 4)

48 Automatic wrapping machine

Autopack Machines (Pvt.) Limited, an Indian company, is offering an automatic wrapping machine that can handle a variety of rectangular cartons used in the pharmaceutical, food processing and cosmetics industries.

The 2 KW (maximum) machine can wrap 60-120 cartons per minute, depending on the size of the cartons.

The machine cuts the cellophane/BOPP film, from a roll mounted on it, to required size, wraps it around the carton and seals on one end and two sides using 110V electrical heaters.

The advantages claimed include its ability to handle a variety of foils; input conveyor for easy handling; facility to adjust temperature (within 1 degree c) of the heaters independently; limited change of parts when switching carton sizes; and polished and plated contact parts.
(Economic & Commercial News 17(49), 1987, 12)

49 Aseptic packaging for low-acid foods

Genesis Packaging Systems, Pittsburgh, Pa, has announced a successful low-acid food process filing by Land O'Lakes, Inc.'s custom products division with the Food and Drug Administration.

The process involves use of a Freshfill SL-1 aseptic filling and sealing machine. Designed and built by Metal Box Engineering and distributed by Genesis, the machine will fill and seal a variety of container sizes.

According to Alan Silverman, Genesis vice president,marketing and sales, the Freshfill machine is a standard design that uses preformed cups and offers considerable versatility to users who are interested in product development and consumer or market tests. He noted that the SL-1 was designed and built to meet the FDA's hydrogen peroxide requirement of 0.1 ppm or less residual level. The FDA subsequently lowered the requirement to a level of 0.5 ppm.

(Packaging 32(13), 1987, 28)

50 Carton sealing machine

Novel Thermoplast manufacture semi-automatic and automatic carton sealing machines for pharmaceutical, engineering, chemical and food processing industries. The machine uses self-adhesive tapes, which have comparatively superior tensile strength, adhesion, water and weather resistance, etc. High quick stick adhesion combined with extra strength makes biaxially oriented polypropylene (BOPP) tapes suitable for carton sealing machine consists of auto feed mechanism, flap closure device and taping mechanism. The filled cartons are automatically fed by auto fed to the flap closure device. This device closes the 4 flaps and passes to the taping mechanism to apply the tape on the top and bottom of the carton simultaneously. These systems adjust automatically during each cycle of carton sealing to suit different size of cartons which can be fed at random. In the semi-automatic carton sealing system, the cartons are fed manually and, therefore, an operator is required to close the top flaps of the cartons and then feed them to apply the tape at the top and bottom of the carton simultaneously. Here, adjustment to different sizes of the cartons is done manually. The speed of the machine depends on the carton length. However there is a minimum gap to be maintained. With this minimum gap between two cartons, a speed of taping 20 cartons per minute can be achieved.

For more details write to: Novel Thermoplast Private Limited, 316 Tulsiani Chambers, Nariman Point, Bombay 400 021.

(Chemical Products Finder 6(4) 1987, 46)

51 Form, fill and seal machine

The Liq-Pak/Oil-Paq/Pow-Paq/Uni-Paq are fully automatic form, fill and seal machines, the working of which is controlled by solid-state electronic circuits which are located on the front side of the machine. The entire machine is encased in a stainless steel cabinet. A number of safety devices are provided for all systems. The packing quantity can be adjusted from 40 ml to 5 litres or 50 g to 5 kg depending upon the type of the machine and as per the requirement. The self-sufficient Liq-Paq packs milk, soya milk, lassi, arrack,etc. Pow-Paq packs any type of powders and granules like tea, coffee, spices, etc. and Oil-Paq packs edible oils, ghee, honey, vanaspati, and Uni-Paq packs uneven size foods like chocolate, wafers, noodles, etc. into strong, hygienic and attractive packs.

For more details write to: Exxon Packing Systems Pvt. Ltd., Al Karim Trade Centre, 9th Floor, Rani Gunj, Secunderabad, Andhra Pradesh, 500 003.

(Chemical Products Finder 6(7) 1988, 70)

52 Composite container

A range of packaging - composite containers and packages - has been developed by Compack to pack a variety of industrial and hosehold products - detergent, milk powder, special foods, tools and engineering parts, chemicals and pesticides and other similar products. There is a built-in barrier foil or plastic lining on the inside of the container and on the base aluminium or metal coated with corrosion resistant lacquer. The composites are fitted with reclosable plastic closures for easy stacakbility. An effective product design is featured on the convolute cans labels, foil or chromo/art paper printed in five/six colours with plastic varnish finish. The composites are expected to have a major impact on the fast food and confectionery packing.

For more details write to: Compack Private Limited, 76 Vishvas Colony, Alkapuri, Vadodara, Gujarat 390 005.

(Chemical Products Finder 6(4), 1987, 10)

53 Composite can

The composite can is a multilayered container relying largely on paper board for strength and plastic or foil materials to add barrier or product compatibility features. The cans are less likely to dent, buckle or split, if dropped. Many sizes are possible while still providing high protection and abuse resistance. Composite packaging systems can be integrated into existing lines, as it is adaptable to most processing equipment now in use. Continuing new developments in protective barriers and sterilization methods are expected to expand composites into new product categories. The composite cans are used abroad to pack frozen juice concentrates, coffee, refrigerated doughs, snack foods, health foods, malted foods, pet foods, and edible oils.

For more details write to: Spiral Pack (India) Ltd., 23/24 Radha Bazar Street, Calcutta 700 001

ANALYSIS

54 Composition analyser

Trebor-99 expands the light transmittance technique to measure many organic constituents; for example, protein, oil, moisture, fibre, sugar, and starch. This is accomplished by coupling Trebor's patented Source Array full wavelength capability, with a more powerful built-in microcomputer. The instrument is thus able to simultaneously measure three or more constituents in a single product. Its unique versatility allows the same unit to measure products as diverse as cheese, grain, meat, and breakfast cereals without the need for grinding or destroying the sample in any way. Features include: accurate even at high moistures and wide temperature range, eg, corn up to 45% moisture at any temperature from -40 F to 110 F; simple to use, no weighing, no temperature measurements, no conversion charts; direct digital readout in %; and fast, the result is displayed in 20 seconds.

For further information write to: Tara International 56/7 Botawala Building, Bomanji Master Lane, Opp. Kalbadevi Main PO, Bombay 400 002. *(Industrial Products Finder 1987 Annual 27)*

55 High performance ion chromatography (HPIC)

Dionex Ion Chromatography System is a uniqe HPIC system which is totally non-metallic in construction i.e. all the wetted surfaces are made up of special quality plastic which is resistant to all acids and alkalies and also to all organic solvents hence the system can be used for all ion chromatographic and HPIC applications without any problems such as corrosion, cross-contamination. The micro membrane suppressors available enable one to detect trace level ionic impurities down to ppb level of concentrations. The system can be used for detection of all anions (organic, inorganic), cations, organics and biological samples with the same case of operation and thus find its applications in the field of pollution monitoring, pharmaceuticals, biochemistry, power, paper and pulp, foods, chloralkali industries and all R&D laboratories. This instrument can also be a good alternative for atomic absorption spectrometer.

For more details write to: Materials Research Instruments, B-63, Mittal Court, Nariman Point, Bombay 400 021.

(Chemical Products Finder November 1987, 51)

PRODUCTION (RAW MATERIAL)

56 All India final estimate of food grain production 1986-87

Production in '000 tons

State/Union Territories	Rice	Jowar	Bajra	Maize	Ragi	Small millets	Wheat	Barley
Andhra Pradesh	6743.4	896.0	199.2	442.8	189.6	127.1	6.9	-
Assam	2385.3	-	-	11.3	-	5.1	125.8	-
Bihar	6009.3	5.4	7.0	889.7	72.9	59.0	2863.1	63.2
Gujarat	451.0	245.1	1026.9	435.0	22.2	16.6	661.7	6.8
Haryana	1543.0	41.0	351.0	66.0	-	-	5055.0	100.0
Himachal Pradesh	105.6	-	-	563.0	4.2	5.6	492.0	34.5
Jammu & Kashmir	590.5	0.1	5.3	519.2	-	9.3	272.1	6.0
Karnataka	2173.4	1844.8	209.4	423.6	1469.8	112.3	148.8	-
Kerala	1133.8	0.7	-	-	1.0	1.6	-	-
Madhya Pradesh	4271.8	1328.1	122.6	767.3	4.8	257.4	3865.0	148.6
Maharashtra	1751.1	3092.4	465.2	77.8	148.6	90.7	536.4	6.5
Manipur	242.5	-	-	16.4	-	-	-	-
Meghalaya	132.4	-	-	23.2	-	2.7	6.1	-
Nagaland	83.2	-	-	7.2	-	-	-	-
Orissa	4834.4	32.7	6.8	173.9	205.3	57.2	83.4	-
Punjab	6022.0	0.2	27.0	526.0	-	-	11150.0	80.0
Rajasthan	129.3	238.9	1014.9	647.0	-	1.5	3401.5	410.9
Sikkim	17.3	-	-	49.0	4.8	-	16.5	1.5
Tamil Nadu	5332.7	688.5	309.9	45.9	348.0	173.5	0.2	-
Tripura	383.2	-	-	-	-	-	4.3	-
Uttar Pradesh	7258.9	444.8	742.2	1501.9	179.1	179.5	16078.4	852.5
West Bengal	8462.9	0.1	-	230.7	12.0	6.2	682.6	16.6
Andaman & Nicobar Islands	27.5	-	-	-	-	-	-	-
Arunachal Pradesh	125.8	-	-	33.4	-	19.8	6.9	-
Dadra & Nagar Haveli	18.9	0.6	-	-	3.8	0.5	0.2	-
Delhi	7.8	6.3	2.7	0.1	-	-	119.6	1.3
Goa	71.1	-	-	-	0.9	-	-	-
Mizoram	45.8	-	-	6.5	-	-	-	-
Pondicherry	60.4	-	2.1	-	2.0	0.1	-	-
Daman & Diu	1.6	-	0.6	-	-	-	-	-
All India	60416.3	8865.7	4492.8	7456.0	2669.0	1125.7	45576.5	1728.4

(Directorate of Economics and Statistics, Ministry of Agriculture No. 1-1(iii)(86-87-AS(E)-ES, 4.1.88

57 All India final estimate of Gram and Tur production, 1986-87.

(Production in '000 tonnes)

State/Union territories	Gram	Tur
Andhra Pradesh	20.3	80.1
Assam	1.7	7.2
Bihar	149.2	105.0
Gujarat	28.1	146.1
Haryana	413.0	40.4
Himachal Pradesh	2.6	-
Jammu & Kashmir	0.4	-
Karnataka	83.3	191.7
Kerala	-	0.2
Madhya Pradesh	1372.4	455.7
Maharashtra	129.4	372.4
Meghalaya	0.3	0.7
Orissa	28.9	93.1
Punjab	82.0	30.2
Rajasthan	760.8	3.5
Tamil Nadu	4.8	106.8
Tripura	0.2	0.2
Uttar Pradesh	1326.7	672.1
West Bengal	50.2	9.6
Dadra & Nagar Haveli	0.1	1.1
Delhi	0.9	0.2
All India	4455.3	2316.3

(Directorate of Economics & Statistics, Ministry of Agriculture, No.1-1(iii)/86-87-AS(E)-ES, 4.1.88)

58 Low ginger output will hit prices, exports

Dry ginger output during the 1987-88 season is expected to be much lower at about 5,000 tonnes as against a normal crop of 13,000 to 18,000 tonnes. With carry-over stock of nearly 5,000 tonnes from the previous season, the total availability during 1987-88 season is placed at only 10,000 tonnes, according to sources here.

On account of the anticipated lower dry ginger crop this year, the price of the commodity has risen sharply to Rs.22 to 23 per kg and may go up to even Rs.25 in the near future. It had been fluctuating between Rs.15 and Rs.18 per kg a few months ago.

Dry ginger exports are also expected to be pegged lower at around 3,000 tonnes during the current season (4,000 tonnes last season). Three years ago, exports had peaked to 12,000 tonnes. Normally India exports about 6,000 tonnes annually and an equivalent quantity is consumed internally.

(The Economic Times 22 December 1987, 3)

PRODUCTION (INDUSTRIAL)

59 Salt production in India

Year	Production (lakh tonnes)
1947	19.30
1951	27.76
1956	33.18
1961	34.81
1966	45.22
1971	54.26
1976	40.76
1977	53.29
1978	66.94
1979	70.37
1980	80.07
1981	89.23
1982	73.08
1983	70.05
1984	76.53
1985	98.75
1986	101.16

Note: Data in this table is taken from the annual reports of the Salt Department.

(The Economic Times 25 February 1988, 3)

60 Area, production and yield of salt in different States: 1982 and 1986

State	Area under cultivation (lakh acres)		Production (Lakh tonnes) (lakh acres)		Average yield per hectare (tonnes)	
	1982	1986	1982	1986	1982	1986
Andhra Pradesh	0.18	0.20	3.87	3.97	21.4	20.1
Tamil Nadu	0.37	0.37	18.39	17.07	49.8	45.9
Maharashtra	0.25	0.27	4.37	3.85	17.5	14.1
Karnataka	0.03	0.03	0.23	0.24	8.8	9.4
Gujarat	1 17	1.16	37.51	66.01	32.1	56.9
Rajasthan	0.10	0.12	7.43	9.18	75.2	76.6
Total (including others)	2.19	2.25	73.08	101.15	33.3	45.0

(The Economic Times 25 February 1988, 3)

61 Production of salt by sectors 1982 and 1986 (Lakh tonnes)

SECTOR	1982	1986
(1) Public Sector	5.11 (7.0)	6.10 (6.0)
(2) Private sector	46.80 (64.0)	67.21 (66.4)
(3) Cooperative sector	7.58 (10.4)	7.85 (7.8)
(4) Non-licensed sector	13.59 (18.6)	19.99 (19.8)
TOTAL PRODUCTION	73.08 (100.0)	101.15 (100.0)

Note: Figures within brackets denote the percentage share to total production.

(The Economic Times 25 February 1988, 3)

62 Production of iodised salt

(in lakh tonnes)

Sector	1983	1984	1985	1986
Public sector	2.04	2.08	1.83	1.67
Private sector	0.02	0.25	1.53	5.60
Total: iodised salt	2.06	2.35	3.36	7.27

(The Economic Times 25 February 1988, 3)

EXPORT

63 Marine items exports

Exports of marine products from India are expected to cross the annual target of Rs.470 crores during the current financial year (1987) according to the latest trends available.

During the period April-December, 1987 exports of marine items, comprising mainly of shrimps and prawns, increased both in terms of quantity and value of 65,906 tonnes valued at Rs.373.79 crores from 62.744 tonnes valued at Rs.339.86 crores in April-December 1986.

This was stated at a meeting convened here on Thursday by the Minister of State for Commerce, Mr.P.R. Dasmunshi, to review the progress of export efforts in the marine products sector.

In the context of the inadequate landings of shrimp and other items, Mr. Dasmunshi emphasised the need for a long-term perspective to strengthen fisheries production for exports.

(Financial Express 9 February 1988, 12)

64 Panel to study cashew output, export prospects

A committee under the Union Ministry of Agriculture, comprising representatives of the Cashew Export Promotion Council and other concerned organisations, will go into various aspects of cashew production and exports, including financial support to meet the growing demand within the country and abroad.

This committee will prepare a comprehensive paper within a month, according to a decision taken by commerce and finance minister Narayan Datt Tiwari, at a meeting held here on Wednesday.

It was felt that the annual plan outlay for cashew development would have to be increased to around Rs. five crores annually if India is to retain its primacy in the world market for cashew, according to a release issued by the commerce ministry on Wednesday.

Against this, the allocation for the entire Seventh plan is Rs. five crores, it was stated.

Since cashew is a substantial foreign exchange earner (Rs.334 crores in 1986-87) it was considered imperative to step up production through various ways, including improvements in productivity.

The commerce ministry is already considering a proposal to set up a cashew board to coordinate developmental activities.

Minister of state for commerce P.R. Dasmunshi said that the focus of development work should be an augmenting the yield rather than expanding the acreage.

The meeting also discussed issues pertaining to an increase in the production of spices in the country. Some of the spices are being imported at present.

(The Economic Times 4 March 1988, 3)

65 Cashew exports earnings up

Exports of cashew kernels from India during January to July, 1987 totalled 23,472 tonnes, an increase of 16 per cent over the exports of 20,208 tonnes in the corresponding period last year. The export earnings registered a 35.4 percent increase and amounted to Rs.2053.2 million. The unit export price during the review period averaged at Rs.87.47 per kg as compared to Rs.75.03 per kg last year.

(Economic & Commercial News 17(46), 1987, 5)

66 Export of iodised salt allowed

The commerce ministry has allowed to the export of iodised salt (used for human consumption) within a limited ceiling on "first-come, first-served basis".

A public notice issued by the chief controller of imports and exports on January 14 said that the export has been permitted "on a review of the position".

(The Economic Times 17 January 1988, 3)

67 Exports of spices from India during 1986-87

(Quantity: M.Tons; Value: '000Rs.)

Commodities	1986-87*	
	Quantity	Value
Pepper	36,879.25	1,991,523.18
Cardamom Small	1,447.14	1,84,952.96
Cardamom Big	193.79	9,602.45
Dry Chillies	4,029.01	46,958.48
Dry Ginger	4,742.10	55,542.28
Turmeric	18,744.13	1,84,768.19
Curry Powder	2,574.61	39,090.26
Coriander Seed	1,079.86	12,664.97
Cumin seed	1,480.40	28,670.41
Celery Seed	2,365.29	23,194.84
Fennel Seed	784.73	10,929.31
Fenugreek Seed	2,784.39	13,512.36
Garlic	551.04	4,879.21
Nutmeg	-	-
Aniseed	-	-
Cassia	246.89	2,927.61
Mace	4.00	195.12
Tejpat	50.88	187.27
Misc. Spices	1,392.06	17,728.37
Oils of Spices	41.14	29,236.71
Oleoresins of Spices	395.61	1,18,217.84
Total	79,786.32	2,774,781.82

Source:Customs lists, provisional figures. Cardamoms: Cardamom Board

* Provisional figures, subject to revision.

(Spices News Letter 21(10), 1987, 19)

68 Salt exports from India

Year	(Lakh tonnes) Quantity
1980	1.10
1981	2.29
1982	3.31
1983	4.87
1984	2.52
1985	4.47
1986	4.33

(The Economic Times 25 February 1988, 3)

IMPORT

69 Raw cashewnet

A quantity of 2,567 tonnes of raw cashewnuts valued Rs.41.8 million was imported into India during August 1987 as against 2,883 tonnes valued at Rs. 36.4 million imported in August 1986. The cumulative total of imports during January to August, 1987 was 32,844 tonnes valued Rs. 514.9 million as compared to only 27,238 tonnes valued Rs.359.5 million for the same period of the previous year. The unit import price during the current year was Rs.15,677 per m.t. as against Rs.13,198 per m.t. last year.
(Economic & Commercial News 18(1), 1988, 6)

70 15 insecticides under OGL

The Union government had allowed import of 15 varieties of insecticides, fungicides and weedicides under Open General Licence (OGL). But these can be imported only by the Indian Farmers' Fertilisers co-operative, Krishak Bharati Co-operative and state agro industries corporations for stock and sale, according to a public notice issued by the chief controller of imports and exports on March 1.

These items are: monocrotophos, methyl parathion, dimethoate, BHC malathion, endosulfan, phorate, dithane, zineb, thiram, 2, 4-D butachlor, benthiocarb and asoproturon.

(The Economic Times 3 March 1988, 1)

TRADE INFORMATION

71 Salient features of salt manufacture in India 1986.

Item	Category I (Licensees with licensed area above 100 acres)	Category II (Licensees with licensed area between 10 and 100 acres)	Category III (Licensees with licensed area below 10 acres)	Category IV (Non-licensed units)	Total
1.Number of licensees	468	683	2310	7117	-
2a.Licensed area (lakh acres)	3.70	0.26	0.41	-	4.37
3a.Actual worked (lakh acres)	1.58	0.19	0.20	0.28	2.25
b.Percent to total	70.3	8.4	8.9	12.4	100.0
4.Average size of actual area per licensee (acre)	337.6	27.8	8.7	3.9	-
5a.Production (lakh tonnes)	64.08	7.45	9.63	19.99	101.15
b.Percent to total	63.3	7.4	9.5	19.8	100.0
6.Averge yield per acre (in tonnes)	40.6	39.2	48.2	71.4	45.0

(The Economic Times 25 February 1988, 3)

72 Pattern of offtake of salt

(Lakh tonnes)

Year	Human consumption	Industrial use	Exports	Total
1983	35.72 (54.7)	24.42 (37.8)	4.87 (7.5)	64.56 (100.0)
1984	40.58 (56.9)	28. 17 (39.6)	2.52 (3.5)	71.27 (100.0)
1985	41.43 (54.7)	29.82 (39.4)	4.47 (5.9)	75.72 (100.0)
1986	42.52 (56.5)	28.52 (37.8)	4.33 (5.7)	75.73 (100.0)

Note: Figures within brackets denote the percent share to total.

(The Economic Times 25 February 1988, 3)

73 Supplies of iodised salt to various states: Quota and actual 1986

(000 tonnes)

States	Quota	Actual supply	% of actual to quota
1. Jammu & Kashmir	41.3	14.4	34.9
2. Himachal Pradesh	29.2	5.0	17.1
3. Uttar Pradesh	218.7	122.0	55.8
4. Bihar	237.0	165.1	69.7
5. West Bengal	65.3	65.9	100.9
6. Assam	166.1	41.5	25.0
7. Arunachal Pradesh	5.3	1.7	32.1
8. Manipur	12.7	11.8	92.9
9. Nagaland	6.7	3.8	56.7
10. Sikkim	3.6	3.5	97.2
11. Madhya Pradesh	114.7	71.5	62.3
12. Maharashtra	70.5	29.8	42.3

contd.

contd.

States	Quota	Actual supply	% of actual to quota
13. Haryana	9.7	3.9	40.2
14. Punjab	24.0	8.3	34.6
15. Chandigarh	3.1	1.8	58.1
16. Delhi	42.8	28.2	65.9
17. Gujarat	19.5	7.1	36.4
18. Mizoram	4.0	-	-
19. Defence ?	4.6	5.1	110.9
20. Andhra Pradesh	2.0	0.5	25.0
21. Rajasthan	-	0.6	-
22. Tamil Nadu	-	3.1	-
23. Kerala	17.7	2.7	15.3
24. Karnataka	-	1.0	-
25. Andaman & Nicobar	-	0.1	-
26. Meghalaya	12.0	-	-
27. Tripura	17.2	-	-
Indigenous 1986	1127.7	598.4	53.1

(The Economic Times 25 February 1988, 1)

74 Edible oils buffer in offing

A blueprint for building up a buffer stock of edible oils and oilseeds on the lines of wheat is expected to be finalised shortly.

Indicating this here on Wednesday, Mr. Sam Pitroda advisor to the Prime Minister on technology mission and Dr.P.V. Shenai, additional secretary in the Union Ministry of agriculture said the report of the working group set up to suggest detailed operational plans of the proposed buffer stock was being awaited. The working group has been specifically asked to support the size of the buffer stock, the methods of intervention for achieving stability in oil prices and the agency which could operate the buffer stock.

He said it was for the first time an integrated approach to oilseeds covering production marketing, distribution and prices was being attempted.

Dr.Shenai said it was possible that the National Dairy Development Board (NDDB) could be the agency which might be asked to operate the buffer stock for oilseeds and oil.

He added that while the working group has been asked to make recommendations, it was the aim of the government to "replicate" the system obtaining for buffer operations in regard to wheat. In other words, the agency handling buffer stock operations would release supplies into the market when prices tend to go up with a view to protecting the consumer and hold back supplies when prices show a declining trend so that the producer did not suffer.

Ultimately, a good price policy, which ensured remunerative price for producers alone could lead to stable situation in regard to availability of oil and oilseeds, Dr. Shenai said.

(*The Economic Times 4 March 1988*)

75 Expanding market for dehydrated food

Dehydrated food may shrink while it dries, but the market for dried food is expanding. Today dehydrated fruits can be eaten right out of a pack, while dried vegetables can be placed in water and heated before they are eaten. Consumers can now buy dried grain, eggs for breakfast, dried meat and poultry for dinner. And dried ingredients like fish paste are used in making food products. There is a tremendous amount of dehydted food on the market and it is not going to go out of style, says experts in food marketing.

The firm M/s Precision Drying System, New Jersey, has developed a new low-heat continuous-drying system for use in the food and pharmaceutical industries. Food and hot air are piped into the stainless steel drying machine from opposite ends. Inside, the food moves up and down continuously on a bed of spherical metal balls, which transfer heat to the food and thereby dry it. When dried, the food emerges as wall chunks or powder. Because the hot air is a relatively low 100 F, essential vitamins, minerals and flavour are not lost. According to the producer, the system matches the high quality of freeze dryers but is 50 percent less expensive. It has the ability to retain the integrity of substances and is still affordable.

The process is suitable for preserving cashew apples as the dehydration may enhance the shelf life. The dried apples can be further used as a raw material in food processing industries or as a dried fruit in bakeries etc. Professor P.M. Edassery, Petaline Flower Food Research Station, Palghat, has developed a simple process of drying the apples after slicing, under sun. It is tested that these dried slices can be stored under room temperature in closed containers for one year or more. As the process is very simple and it can be done by even farmers themselves, this will being additional income to the farmers and will open new ways for utilization of cashew apples now being wasted.

(Cashew Bulletin 24(10), 1987, 13)

76 Plea to scrap excise duty on biscuits

The Federation of Biscuit Manufacturers of India has urged the Government to abolish excise duty on biscuits so that it could be made available at a much cheaper price.

Mr. S.P. Chauhan, President of the Federation told newsman here on Monday that the general belief that biscuits were the food of the rich was not true. A recent study conducted by the National Council of Applied Economic Research on "National market information survey of households" has revealed this.

The study had pointed out that 55 per cent of the biscuits manufactured in India were consumed in rural areas.

As much as 37 per cent of the total biscuits were consumed by those household whose monthly income was Rs.750.

Significantly, cakes and pastries which were consumed by over 85 per cent in the urban areas and were mostly bought by the upper strata did not attract any excise duty since it was mostly manufactured in the small-scale sector. In the process the Government was helping the rich at the cost of the poor, Mr. Chauhan added.

(Financial Express 20 January 1988, 4)

77 Cashew board mooted

The formation of a cashew board on the lines of the Rubber Board, to look after production, research and development of cashew, has been recommended by the steering committee of the Indian Cashew Development Council.

(The Economic Times 22 January 1988, 4)

78 Excise corks up soft drinks industry

The soft drinks in the organised sector with an investment of Rs.300 crores is working at 35 per cent of its installed capacity mainly because of the steep excise burden. It also faces competition from the unorganised sector which not only enjoys tax concessions but also succeeds in evading whatever little is levied upon it, according to sources close to the industry.

It is estimated that there are about 5,000 unorganised soft drink makers in the country who produce about 70 million to 80 million cases which is more than the production of the organised sector. As against this, in the organised sector there are only 150 soft drink companies in the large, medium and small sectors, the sources point out.

The already high excise burden was increased by 60 per cent, from 30 P per bottle to 50 P per bottle in the 1987 budget for flavoured drinks. Similarly, for soda, which accounts for half of the sales of soft drinks, the excise was raised by 100 per cent, from 15 P to 30 P per bottle. As a consequence, the market price for flavoured drinks was raised to Rs.2.75 to Rs.3 per bottle and for soda from Rs.1.50 to Rs.1.75 per bottle.

The consumer resistance at these high prices resulted in the negative growth rate for the industry. The soft drinks sector for several years was showing growth rate of 10 per cent to 12 per cent per annum. But this healthy trend has now been reversed, according to the sources.

It is suggested that to nurse the industry back to health, the Government should slash duties to the pre-1987 budget levels and also restore Modvat facilities, which were abruptly discontinued after having been granted in the 1987 budget.

Out of the retail price of Rs. 3 per bottle now prevailing, manufacturers are getting only about Re. 1 per bottle. Apart from the heavy excise, there is also duty on crown corks and bottles. Similarly, there is excise duty on carbon dioxide gas and flavouring essences used in the production of soft drinks.

Besides, there is sales tax on soft drinks and beverages and aerated waters in every State which is paid by the organised sector only. The ST burden comes to 15 P to 20 P per bottle. Again, the organised sector is paying octroi which works out to four paise to five paise per bottle.

The total tax element constitutes nearly 80 per cent of the value realised by the manufacturers for flavoured drinks while in the case of soda the total tax element works out as high as ten per cent of the net ex-factory price of the manufacturer.

The sources point out higher tax burdens on the organised sector provide more incentives to the unorganised sector whose further expansion is bound to increase health hazards to an average consumer, the sources add.

(Financial Express 25 January 1988, 3

79 Panel for norms on alternate inputs for alcohol

An inter-Ministerial panel to draw guidelines for production of alcohol from non-molasses based raw material has been set up. Headed by the Secretary, Chemicals and Petrochemicals, Mr. H.K. Khan, the panel will look into the supply of various alternative raw materials such as tapioca, mahua flower, beetroot, spoiled wheat, spoiled rice, spoiled fruits and potato to manufacture alcohol.

The modalities for assessing quantities available in each State, which could be assumed as surplus for being allowed to be used for alcohol manufacture, will be determined by the panel. It will also look into the capacities to be allowed for alcohol manufacture from each raw material without detriment to the interest of other users of these inputs.

(Chemical Products Finder November 1987, 95)

80 Alcohol from non-molasses States seek new units

The states have urged the Central government to allow setting up new capacities for manufacture of alcohol for potable purpose from raw materials other than molasses.

The non-conventional raw material identified at the meeting of state representatives convened on Wednesday by Mr.H.K.Khan, secretary chemical and petrochemicals were tapioca, mahuwa flower, beetroot, spoilt wheat, fruit, rice or grain and potato.

It was suggested that guidelines should specify the raw materials that can be used and these should also be mentioned in the licence or registration. Only those should be selected which are available in sufficient quantities or whose production is flexible to demand. Damaged wheat and rice should be allowed through recognised agencies.

The meeting felt that the technology to be adopted must permit use of different raw materials as alternative so that the licenced units did not get bogged down on account of being tied to a single raw material which might not be available in sufficient quantities of that point of time.

It was also suggested that licences should be given under the industrial (regulation and development) Act. It was felt that licensing should be allowed freely without much restrictions so that the market forces can play their part. This will also ensure better remuneration to agricultural and horticultural growers.

According to an official release, it was felt that an assessment may be made about the present gap in demand and supply of potable alcohol and quantitative limit may be placed on the new licences and registrations to be approved in the next three years.

(The Economic Times 25 December 1987, 8)

81 Research centre for energy

A research centre for energy management will soon be set up in the capital.

A committee has been set up under the chairmanship of Mr.K.L.Puri, former chairman of Bharat Heavy Electricals Ltd. (BHEL) by the Foundation for Organisational Research and Education(FORE) sponsors of the Research Centre.

Named as "Force" the Centre will promote energy management research studies and disseminate information on energy management through seminars and workshops.

(The Economic Times 7 March 1988, 8)

82 Per capita grain availability drops

The per capita availability of foodgrains has come down by 2.3 per cent in 1987, despite a heavy draw-down of cereal stocks, which ammounted to 8.7 million tonnes.

The latest official figures show that the per capita, net availability during the year was 465.5 grams per day, consisting of 429.3 grams of cereals and 36.2 grams of pulses.

There has been a sharp decline in the availability of pulses by 13.6 per cent from 41.9 grams per day in 1986. In the case of cereals, the decline was 1.1 per cent from 434.2 grams per day in 1986. The overall foodgrains availability in 1986 was 476.1 grams per day per person.

(Deccan Herald 7 March 1988, 15)

83 Vegetable processing and packaging

Newell Vegetable Co-op Ltd. Alberta (Canada), is willing to cooperate with prospective entrepreneurs in developing countries to promote the transfer of its state-of the-art know how for the preparation, processing, quick-freezing and packaging of vegetables of all types.

(Business World 7(22), 1988, 65)

84 Export promotion for Indian products in America

Jaffe Export Promotion Service, P.O. Box No.438, Yonkers, New York 10705 (Telex 4930458) will be publishing from January 1988 a monthly Newsletter titled "Made in India" meant exclusively for promoting Indian products in the United States of America and Canada.

The Newsletter which will contain descriptive information about all kinds of consumer and industrial products from India, is meant primarily for circulation among wholesale importers and distributors of foreign products in America.

Manufacturers interested in testing their products in the Newsletter may write to Jaffe for editorial guidelines.

(Cashew Bulletin 24(10), 1987, 16)

85 New exim policy to boost spices export

A new import-export policy to be implemented during 1988-89 is being formulated by the Union government, minister of state for commerce Priya Ranjan Das Munshi said today, reports UNI.

Laying the foundation stone for a Rs.1.55 crore building of the Spices Board, Mr.Das Munshi said that the policy was intended to give a boost to exports.

Mr.Das Munshi said that there was need for a change in the methods of working of the Spices Board and also of other commoditity boards. The boards should act as agencies for collecting and disseminating information to all sections of the industry.

The Spices Board should collect information on global supply and demand and provide farmers information regarding the quality of the produce vis-a-vis the quality of produce from competing countries to enable them to improve the quality of the spices produced by them, he said.

Export contracts entered into prior to November 6 are to be exempted from payment of the new 3.5 per cent cess on pepper exports imposed on that date.

Disclosing this, Mr. Das Munshi, said modalities in this regard were being worked out by the law ministry.

Earlier, Prof. K.V.Thomas MP, who presided,,made a strong plea for withdrawal of the 3.5 per cent cess, which worked out at Rs.8000 per tonne.

(The Economic Times 1 January 1988, 5)

86 US curbs dampen pepper trade

The pepper trading community is concerned over the regulations imposed by the Federal Drug Administration (FDA) of the US on the import of black pepper from India.

Originally, FDA had clamped automatic detention on all black pepper consignments received from India. Later, however, it relented a little and stipulated that exporters who shipped five consecutive consignments without impurities would be free of this constraint.

Following this US regulation, there has been a sharp fall in the prices of black pepper in the domestic market. Exports to other countries also suffered a setback on this account.

The Spices Board, for its part, has initiated certain measures to improve the situation. It has sent out instructions to the officers and staff concerned to tighten inspecton procedures for shipment of black pepper. The services of the Export Inspection Agency has also been commissioned for this purpose.

The Board has taken steps to prevent price undercutting by exporters. It has asked the exporters not to export at prices below the minimum export price as agreed upon by . Pepper Community as its meeting held last year. Compulsory pre-shipment registration of pepper export contracts has also been introduced.

On the domestic front, the Spices Trading Corporation has increased purchases and the Cooperative Marketing Federation of Kerala has also entered the market more actively. Consequent on these measures, the price slide has been arrested to some extent. Improved buying from Europe and other countries has also beenreported.

Meanwhile, export of spices this year is likely to fall short of the figure achieved last year. It, however, is expected to exceed the target of Rs.260 crores fixed for the year. Exports till the end of February has been worth Rs.230 crores.

(Financial Express 22 March 1988, p 1)

87 Cardamom production and trade

The prolonged drought during the year has affected production of cardamom in the country and this in turn has contributed to the low-key activities on the spices export front as a whole. As against a production of 2900 tonnes of cardamom, the total volume of export from the current year's crop may not exceed 300 tonnes.

Besides, the domestic prices have been on the higher side giving an edge to Guatemala, the main rival in the international market, which is offering the commodity at lower prices.

The Spices Board's strategy has been to promote domestic consumption of cardamom to build a strong base or the industry. This is meant to encourage the industry to increase productivity and production and generate surpluses for exports at competitive prices. Domestic consumption this year is expected to be higher, somewhere in the region of 2500 tonnes.

(Financial Express 22 March 1986, 1)

FOOD REGULATION, QUALITY CONTROL AND HYGIENE

88 Tea can cause lead poisoning

The cup of tea that cheers can cause deadly lead poisoning. According to the main findings of a team of scientists at the Industrial Toxicological Research Centre (ITRC) in Lucknow, the amount of lead leaching out of tea leaves depends directly on the temperature of the water used to make the drink and its acidity level. The study team led by professor T.D. Seth, found that the danger to the drinker increases if tea leaves are kept brewing in decoctions at high temperatures since this facilitates greater leaching of lead.

(Deccan Herald 23 January 1988, 7)

89 Govt. okays irradiation of sea food, spices

The Centre has permitted the Atomic Energy Commission (AEC) to use irradiation for sterilising sea food and spices meant for export.

This was stated by Dr.M.R. Srinivasan, AEC Chairman, at a function organised by the Rotary Club here today. Irradiation would ensure the safety standards set against bacterial contamination by Western countries. This would also reduce export costs and save time as irradiation was hitherto being done at places like Amsterdam before the items reached their destination.

(Deccan Herald 24 February 1988, 9)

90 Recent FDA decisions

The Food and Drug Administration (FDA) has extended its import alert on soy drinks and other beverages touted as infant formula substitutes.

FDA's alert says it will automatically detain all soy-based drinks that are not registered as infant formulas if their labeling either directly or indirectly implies the product can be used as an infant formula. It also said that soy-type beverage labeling should include the statement: "This product is not to be used as an infant formula or as the sole source of nutrition."

Reports of nutritionally inadequate products promoted as infant formula should go to Curtis E. Coker Jr., Center for Food Safety and Applied Nutrition (HFF-314), FDA, 200 C St. SW, Washington, D.C. 20204, Details: Federal Register, July 8, 1987, pp. 25636-25637, and Food Chemical News, July 13, 1987, pp. 42-43.

In other food-related decisions, FDA has affirmed that beta-carotene is generally recognized as safe (GRAS) when used as a nutrient supplement and when used in dairy product analogs, fats and oils, and processed fruits and fruit juices. Details: Federal Register, July 6, pp. 25209-25211.

Likewise, enzyme-modified refined beef fat, enzyme-modified butterfat, and enzyme-modified steam-rendered chicken fat were affirmed as having GRAS status when used as flavouring agents and adjuvants. In addition the agency expanded the list of sources for the preparation of enzyme-modified milk powder to include reconstituted milk powder, whole milk, concentrated or condensed whole milk and evaporated milk. Milkfat now can be used in the preparation of enzyme-modified butterfat. Details: Federal Register, July 10, 1987, pp. 25974-25976.

(Journal of the American Oil Chemists Society 64(9), 1987, 1282,1287)

91 Barc unit monitoring food articles.

Samples of all kinds of food articles imported from Central Europe are kept in constant vigilance to test the radiation level at the variable energy cyclotron centre of the Bhabha Atomic Research Centre situated in the northern fringe of Bidhan Nagar (Salt Lake City).

This is being done since the time of the Chernobyl disaster in the USSR as there is a concern among the public that these articles may have been affected by radiation, according to Dr.Bikash Sinha, Director the centre.

Dr.Sinha says that this research is a continuous process and is being done here and at Trombay. "Very rarely but certainly in some cases the radiation level has been found to be more than that allowed by the world standard in this respect," he says adding, "that does not mean, however, that there is anything to be concerned about.

"The radiation level of the soil of different parts of India too varies For example, the radiation level of the soil of eastern India, on an average, is higher than that of the western region for many geophysical reasons, particularly mining. In the soil of Kerala, because of the large thorium content, the level of radiation tends to be higher but this has created absolutely no problem for centuries.

The centre, he says, has also analysed samples of tea produced in north India for any possible radioactivity since a number of countries importing tea from India require a certificate before receiving the consignment that it is free from radiation resulting from the nuclear accident at Chernobyl. The centre is extending this service to various tea companies. *(The Economic Times, 5 March 1988, 8)*

TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES

92 Sakthi group plans soybean project with TIDCO

The Sakthi group of the south, with interests in tea, coffee, and textiles and a group turnover of Rs.200 crores, has now teamed up with the state-owned Tamil Nadu Industrial Development Corporation (TIDCO) to set up a Rs.21 crore soyabean processing plant.

The plant, with the capacity to process one lakh tonnes of soyabean a year, is scheduled to be commissioned in early 1989.

The Sakthi group will contribute Rs.2.04 crores towards the project, to be set up in Coimbatore district of Tamil Nadu while TIDCO will contribute Rs.2.12 crores. The financial institutions have sanctioned a loan of Rs.12.10 crores and the remaining Rs.4 crores will be raised from the public.

(Business India No. 251, 1987, 16)

93 Double cola bottling plant near Madurai

The Rs. three-crore double cola bottling plant, started under the auspices of the Falcons Beverages (India) Private Limited, capable of filling up 300 bottles per minute was inaugurated recently at Paravai, about eight km from here, by Mr. M. Arunachalam, Union Minister of state for Industries.

Mr. Arunachalam said the government was considering formulation of new policies for the development of backward areas by bringing latest technologies to the rural areas. He said there were 60 such units throughout the country manufacturing soft drinks. Though permission had been granted to the units to fill up as many as 3,750 million bottles, they were producing only 1,660 million bottles representing only 50 per cent of the capacity created.

In his welcome address, Mr. B.G. Ghosh, chairman, Falcons Beverages (India) Private Limited, said this project was conceived by non-resident Indians in 1984 and described the plant installed here as a very sophisticated one" having most modern water treatment plant and other processing facilities.

President of the Double Cola Manufacturing Co., V.C. Gopalakrishnan, said the Madurai unit was the fourth bottling plant put by Falcons Beverages (India) Private Limited. More than Rs. 20 crores had been invested by non-resident Indians in these plants, he said.

(The Economic Times 17 January 1988, 11)

94 Ginger oil plant in Assam

A Rs. 25 lakh ginger oil and powder plant will be set up in private

sector at Ghungoor, 10 km from Silchar, to produce six tonnes of oil and 60 tonnes of powder annually. Chimaya Industries, the company, will export bulk of its output and would process 600 tonnes of raw ginger in Mizoram and North Cachar. Financed by the Assam Financial Corporation, the plant will provide employment to about 100.
(Chemical Products Finder 6(4), 1987, 81)

95 Petrol from bagasse

Petrol will be manufactured from baggasse (juice extracted sugarcane) by a private sector company in Ludhiana.

Mr. Abey Oswal, Chairman and Managing Director of Oswal Agro Ltd., said that Petro Bross of Brazil would be supplying the technical knowhow for this project. The petrol manufactured thus would be available at half the price of conventional petrol.

Explaining, Mr. Oswal said that the sugar unit of his group would be able to supply the requisite bagasse. The capacity of the mills would be increased from the present 1200 tonnes per day to 4000 tonnes.
(Financial Express 20 January 1988, 9)

PERSONALIA

-Nil-

RAW MATERIALS

96 Vegetable round the year

A young scientist of the Institute of Agriculture Science, Banaras Hindu University here, has successfully transplanted a plant which provides vegetable round the year and has been suitably adapted to local soil and atmospheric conditions.

Mr.D.S. Tripathi told UNI that the plant once sown bears fruit for three consecutive years.

Fruits of the plant, which look like tomato in size and appearance, are slightly bitter in taste, though the bitterness disappears on cooking.

He said the seeds of the plant known as "Solanum macrocarpon" (LINN) were procured from Nigeria and grown with remarkable success after acclimatisation.

In northern Africa, the plant is grown in abundance for its edible leaves and fruits.

The plant's prolonged flowering period extends from February to the beginning of December but can continue further. On maturity, the colour of the fruit changes from deep green to yellow, finally turning brown, Mr. Tripathi added.

While fruits are maximum from March to November, it continues throughout the year.

Mr. Tripathi said the fleshy leaves could serve a leafy vegetable as it is rich in vitamin and proteins. He said efforts were on to use it as a substitute to the tomato.

Besides, its flowers could also be chewed or rubbed on the teeth and the branches used as tooth brushes..

(Financial Express 21 March 1988, 6)

STORAGE AND INFESTATION CONTROL

97 Natural fruit preservation process

A revolutionary process from France, which claims to be a completely natural one, will soon ensure that all fruits and vegetables,with a high sugar content (prunes, carrot, bananas) can be preserved for periods of two to six years without undergoing the slightest deterioration in their taste or appearance.

This French technique offers clear advantages over traditional dehydration methods. Now, on exposure to open air, preserved fruit can last up to six months. The degree of biological purity attained through the use of this method is extremely high, and what is more this new procedure is much less costly.

The new PHINE process eliminates the rehydration phase of the cycle. The fruit is exposed to varying temperatures which never exceed 75 C. Each step has been pre-determined after careful analysis of the product's sugar content and other components. The cycle is stopped when the residual degree of humidity reaches level of 35%. While the pH of fresh fruit is usually between 5.5 and 5.9, fruits treated by the PHINE process rarely surpass the level of 4. This is an important threshold, since yeast and moulds cannot develop at this level.

The principle behind the PHINE process is based on complex notion of organic chemistry in simple terms, the heat provides the energy necessary for an architectural reorganization of the sugar molecules of the fruit. The product is stabilized at a particular balanced level that can only be destroyed by temperatures lower than 20 C or greater than 72 C. Moreoever, bacteria undergo a sort of "cleaning" and desporulation. Enzyme chains are inactivated.
(Beverage & Food World Annual 15(1), 1988, 88,90)

98 Fruits and vegetables kept fresh with vitamin C compounds

Vitamin C derivatives and other compounds prevent browning of cut apples in laboratory tests up to 48 hours and may be alternatives to sulfites for keeping salad-bar-style fruits and vegetables fresh, Agricultural Research Service scientists report.

"We think further studies will show that these compounds prevent browning for at least several days under commercial conditions", says Kevin B. Hicks, leader of a research team at the Eastern Regional Research Center in Philadelphia, P A. "There is industry interest in working with us to test the new uses of these compounds".

Dipping apple slices in either of two classes of compounds closely related to vitamin C-ascorbic acid-2-phosphates and ascorbic acid-6-fatty acid esters-was most effective and prevented browning for up to 48 hours, according to preliminary results of research done in cooperation with scientists at Kansas State University.

The compounds worked on Winesap and Red Delicious apples, Granny Smith apple juice, and patotoes. Further studies may be done with cauliflower, mushrooms, lettuce, and other vegetables and fruits.

"We expect that these compounds will be safe and not affect taste", Hicks says, "but some will require Food and Drug Administration approval before use on food".

Some fresh fruits and vegetables begin to turn brown once they are cut, sliced, or peeled. "Exposure to air helps an enzyme, polyphenol oxidase, react with polyphenols natural chemicals inside these foods", says Gerald M. Sapers, a food technologists who developed the procedures to evaluate these compounds.

Sulfites were the most effective compounds for slowing down this reaction, Sapers says, but the FDA banned them last July for use on raw fruits and vegetables. "Ordinary vitamin C can be used but is effective for only a short time", he says. "The compounds we studied are far more effective than that".

Some of the compounds studied are already used in Japan for various foods, and one of them, ascorbyl palmitate, is used in the United States to preserve fats and oils. ARS is applying for a patent on their use as antibrowning agents.
(P.T.I. *Science Service* 7(5), 1988, 22-23)

✓ 99 New method to keep vegetables fresh

A combination of ozone, carbon dioxide and gamma rays can be ten times better as a preservative for vegetables and fruits than the traditional methods.

The Ozone-carbon dioxide combination, developed by scientists of the Institute of Chemical Physics of the U.S.S.R. Academy of Sciences, disinfects the storages and retards the ageing process of vegetables.

While studying the ageing mechanism of potatoes, it was noticed that doses of gamma radiation which are safe for human beings eliminate nearly all centres of infection in tubers and prevent their sprouting.

Laboratory tests of the new method have proved its efficiency, 96% of potatoes stay nutrient and tasty for 12 months.
(*Beverage & Food World Annual* 15(1), 1988, 88)

100 Preservative for long-term grain storage

The P-7 Grain Preservative is said to be uniquely effective in preserving grains for long periods of time. Even used on grains with up to 28 per cent moisture, it inhibits the growth of moulds and fungi that cause dangerous aflatoxin and mycotoxin. It also prevents mill and dust fly, and increases throughput.

For further information write to: Force V. Inc., 5015 Sharp Street, Dallas, Texas 75247 U.S.A.
(*Industrial Products Finder* 16(8), 1988, 199)

FOOD ADDITIVES

Nil

PROCESSES

101 Apple snack

As a result of a revolutionary new food processing technique, a new natural snack product, Apple Chips, is being introduced to the Pacific Northwest and is expected to stimulate the local area economy. Apple Chips is manufactured by M.C. Snack, Inc., a division of Mitsubishi Corporation of Japan.

Apple Chips has been one of Japan's fastest growing food products over the past several years. This introduction is Mitsubishi's first venture into the snack food industry.

Apple Chips is establishing its own very special niche in the market place. It is not jumping on the current fruit snack bandwagon where the fruit snack is sold either as a soft snack or as a hard chip. Rather it will appeal to both the snackers who crave the texture of a potato chip and to the consumer who seeks a more nutritious and wholesome choice.

Apple Chips resemble potato chips in texture. However, it is the manufacturing process that is unique. The production of the chip entails a vacuum cooking process done at a low temperature. A non-cholesterol vegetable oil is used. No salt or preservatives are added. Each bag of chips contains the equivalent of two apples.

Each 2.5 ounce bag of Apple Chips will retail for $1.49 and will be positioned in the regular snack departments of major supermarkets in Washington and Oregon.

(Food Production/Management December 1987, 22)

102 Soft drink from cardamom

A new use has been found for the Mysore variety of cardamom grown in Karnataka, namely in the manufacture of a soft drink with the flavour and taste of Coca Cola.

The new drink developed by Mr. R.J.H. Pannel, a British food consultant and authority on flavours who has undertaken a variety of research and development programmes for the Spices Board of the country. The programmes taken up by the Board with financial and technical assistance of the International Trade Centre, Geneva, are to diversify the uses of cardamom.

Mr. Pannel told an "exposition on the end uses of cardamom" organised by the Spices Board here today that Mysore Cardamom could replace cassia and cinnamon used in Coca Cola. The oil extract from Mysore cardamom could also be used in the manufacture of carbonated gwaha which had the potential to replace the combined decoctions of coffee and cardamom popular in Saudi Arabia. The carbonated drink suited the hot climate of Saudi Arabia and also the taste of the younger generation there.

Mr. Pannel noted that Saudi Arabia and other parts of the Middle East were still the best markets for Indian cardamom. The Scandinavian countries of Sweden, Denmark and Finland and also northern West Germany, where cardamom was used in bakery products, were also a potential market for Indian cardamom, especially the Malabar variety.

Mr. Pannel told the meeting that the Malabar variety was more suitable than the Mysore variety for use in biscuits, Danish Pastry, high-boiled sweets and chewing gum. The Mysore cardamom oil was particularly suitable for carbonated drinks and toffees. The availability of the two different types of cardamom had placed India in a unique position in the world market.

The expert stressed the need for India to export cardamom oil and not raw cardamom. The country also had to give attention to removing the bacteria present in raw cardamom. Though gas treatment of cardamom was in practice till recently, it was not being accepted now by the importers. Even gamma ray radiation was not acceptable in many countries, including his own Britain. Only the Netherlands allowed the import of gamma ray-treated food products. The liquid carbon dioxide method was the latest in the extraction of cardamom oil.

Mr. Pannel added that Mysore cardamom was being used by the perfumery industry also. Even the Malabar variety might be suitable for that industry.

Mr. Devakaran said though the Government of India had cleared the irradiation of spices for export and onions, the importing countries were not favour of it.

(*The Hindu* 26 May 1988, 4)

103 Clear juice from apricots

Clear fruit juice is rarely made from apricots, but USDA's Agricultural Research Service Scientists have a new way to do it that could increase the fruit's use in beverages and foods.

Among food processors, the clear apricot juice should be easier to use than thick, cloudy nectar when added to soft drinks, fruit drinks, and products such as frozen juice bars, says Charles C. Huxsoll.

Huxsoll, and colleagues Keng C. Ng and Marcus R. Hart, adapted food-processing techniques - relying on enzymes and ceramic filters - to eliminate the apricot pulp and produce a liquid that isn't cloudy.

Until now, there was no practical or economic way to produce a clear apricot juice.

Huxsoll says the new process is "probably the most simple and least expensive yet devised to produce a clear apricot juice, as opposed to a thick nectar".

Juice is extracted from pulpy concentrate by using a special blend of different commercially available enzymes, known as macerating enzymes. Very small amounts of these natural chemicals quickly break down the concentrate into liquid and some pulp residue. Passing this mixture through a porous ceramic filter separates the clear juice from the leftover pulp ingredients.

Enzymes have long been used in food processing, but some of those needed for the juice product have only recently become available at a reasonable cost. The ceramic filters are a new development during the past few years. Because of its natural sugar-acid balance, the juice is probably best-suited as an ingredient, he says.
(PTI Science Service 7(10), 1988, 18-19)

BYPRODUCTS AND WASTE UTILISATION

104 Fuel from agro-waste

The Indian Institute of Technology, New Delhi, has developed a process for the conversion of agricultural waste into a quite cheap and useful alternative source of energy.

The process is based on conversion of biomass like paddy husk and groundnut shell waste materials of low calorific value into highly efficient sources of energy called briqueted fuel.

The cost of one kilogram of the fuel, which gives about 5,500 kilo calories of heat energy is expected to be less than Rs.1.50.

Briqueted fuel, an ideal alternative to firewood, leco, coal,etc.
(The Hindu 23 March 1988, 24)

PROCESSED PRODUCTS

Nil

EQUIPMENT AND MACHINERY

105 Foil and cap sealing machines

Plastopack manufactures foil and cap sealing machines suitable for sealing the mouth of the containers filled with a variety of items. The containers can be HDPE, LDPE, PP, glass, etc. The lidding material can be inner plugs of HDPE, LDPE, PP or aluminium foil or coated paper. The machines are simple and easy to operate. The standard models can seal containers having mouth diameter up to 3". Machines are also tailor-made to suit specific requirements. Adjustments for accommodating different sizes of containers and controls for temperature of sealing various materials are also provided.

For more details write to: Plastopack 2149 L Block, 7th Street, 12th Main Road, West Anna Nagar, Madras 600 040.
(Chemical Products Finder 6(12), 1988, 55)

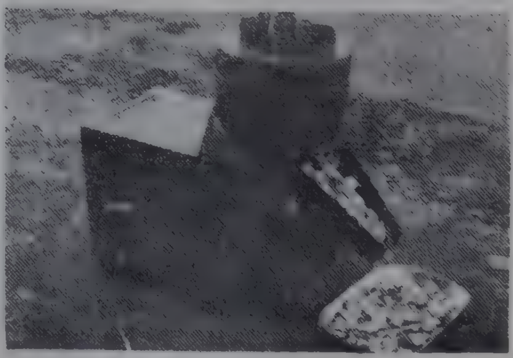
106 Coconut dehusker

Central Plantation Crops Rèsearch Institute has developed a hand operated coconut dehusker with a capacity to dehusk 150 nuts/hr. The overall dimension of the machine is 680 mm x 275 mm x 1980 mm weighing 50 kg. It mainly consists of a telescopic levers tool holder, blade and springs and a platform. The piercing blades when come in contact with the hard shell of the coconut placed vertically on the platform expand in horizontal plane. Design of upper blades is such that it automatically gives twist to the husk for its easier detachment. Husked nut is removed and the loosened husk is then peeled off manually. The cost of the equipment is Rs.1,000/-.

For further information contact: Central Plantation Crop Research Institute, Kasargod, Kerala State.
(Rural Technology Journal 4(4), 1988, 29-30)

107 Mechanical chipper for tapioca

The keeping quality of tapioca is very poor in that discolouration and deterioration occur within a period of one week after harvest. One method of improving the shelf life of the tuber is to store it in the form of dried chips. At present the tuber is sliced manually which is higly time consuming and inefficient.



Therefore, a vertical feed type motorised tapioca chipping machine has been developed. It consists mainly of a feed hopper with guides, chipping disc with knives, chips outlet and a 0.5 HP single phase electric motor. The feed hopper is provided with vertical guides made of pipes of diameter 25 to 80 mm for 100 mm height to facilitate the feeding of tubers of varying diameters. Through these guides the tubers reach the chipping knives mounted on the chipping disc, rotating at 300 rpm. The capacity of this unit is 270 kg/hour. It costs around Rs.2000.

(*TNAU Newsletter* 17(11), 1988, 2)

108 Cold seal adhesives

National Adhesives, UK, are the manufacturers of adhesives for industry. Through their research and development they are able to introduce products that in some cases can revolutionise the production process. In the flexible packaging industry one of these important developments has been the introduction of cold seal adhesives. The range of Koldlok cold seal adhesives have broad applications and are ideal for the packaging of dry, aqueous and fatty foods as well as many products in the medical field. Koldlok cold seal adhesives form an instantaneous bond when packaging substrates coated with their natural rubber films are forced together pressure sealing the package contents. This can speed up on-line packaging by as much as 100% when compared with conventional heat transmission techniques.

For more details write to: Asma Agencies, 7 Raikar Bhavan, 2nd Floor, Sector 17, Vashi, New Bombay 400 705.

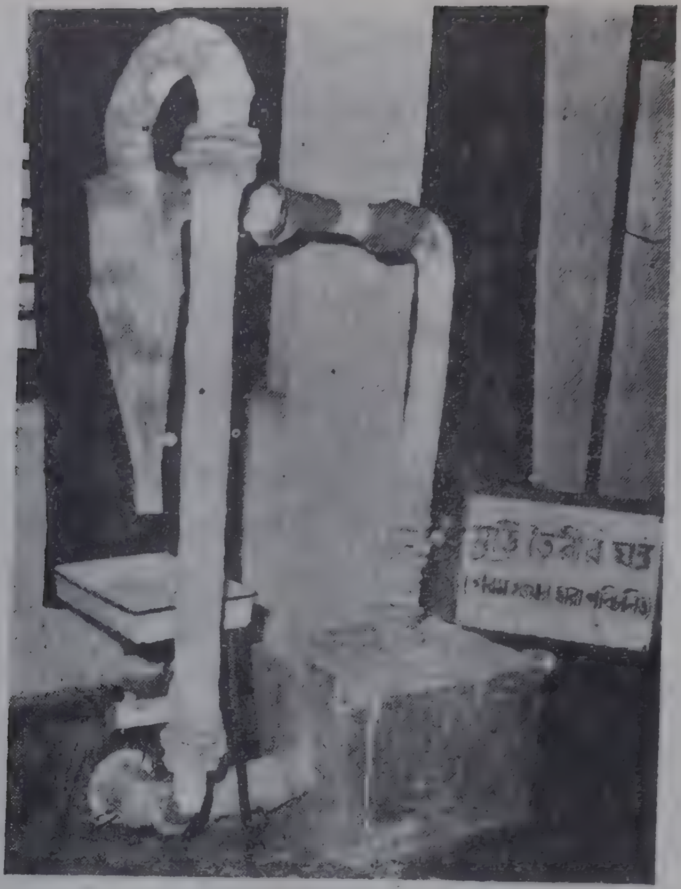
(*Chemical Products Finder* 6(12), 1988, 57)

109 Continuous rice puffing machine

Puffed rice is widely consumed in our country, especially in the villages. Considered to be the poor man's diet, it is a cheap and ready-to-eat food. It is liked for its colour, flavour, crispness and taste.

Sand roasting

Puffed rice is traditionally prepared by sand roasting of preconditioned rice. The process is tedious and time consuming. The maximum output attainable by this method is only about 2.5 kg/hr. Being sand roasted, the sieved puffed rice contains some traces of sand which makes it uncomfortable to eat and is injurious to health. In spite of its shortcomings, the traditional method has survived since ages, and no alternative/technology is yet available.



The rice puffing machine.

Some research has been done to modify the conventional process with a view to increase its puffing capacity and improve its overall efficiency.

A simple rice puffing machine based on the principle of hot fluidized bed has been developed. Preconditioned rice is fed in a continuous flow to a vertical column of hot air bed. The air velocity is so maintained as to keep the rice grains under suspension. Once the rice is puffed it travels upward due to its low density and is collected through a cyclone separator. To save energy the hot air from the cyclone separator is recirculated. The operation is fully automatic.

The hot air can be obtained by means of electric heaters, gas burners or an oven fueled by agriculture waste. The electric blower can be replaced by a manually operated blower. The technology is simple, easy to operate and gives puffed rice fully free of impurities.

Comparing the energy required for puffing, the new process has been found to use 50% less energy than the traditional one.

The present laboratory model has a capacity of 25 kg/hr. However, it can be scaled up for higher capacities according to the requirements of the industry.

The new technology offers scope for opening an industry both at home and cottage scale levels. Even a large industry can be opened using this machine.

Laboratory studies are still underway to optimize the design parameters of the machine and to make it more economical.

For details write to: P.R. Chandrasekhar, Post Harvest Technology Centre, Indian Institute of Technology, Kharagpur 721 302.
(*Invention Intelligence January 1988, 35-36*)

110 Portable power ghani

The traditional ghani, used for oil extraction from seeds, consists of a simple wooden or stone mortar with its pestle driven by bullocks. The oil extraction by these traditional ghanis became uneconomical in the seventies due to high investment on bullocks, higher operating cost and low efficiency. In order to rescue this rural industry, the Khadi & Village Industries Commission (KVIC) mechanized the system by replacing bullocks with electric motors and a drive

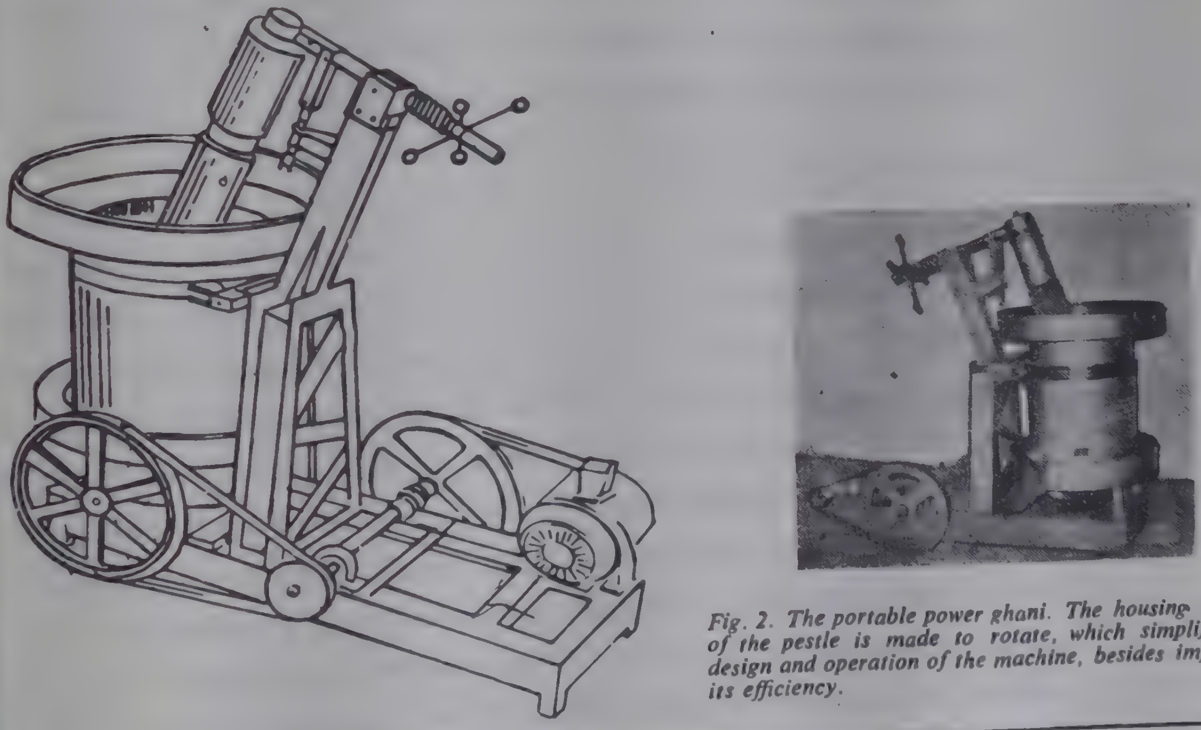


Fig. 2. The portable power ghani. The housing instead of the pestle is made to rotate, which simplifies the design and operation of the machine, besides improving its efficiency.

mechanism. Such a ghani is referred to as the Power Ghani.

The introduction of the power ghani did not cause displacement of labour and at the same time the quality of the oil was also retained, since the extraction process was not changed.

The portable power ghani has some special features: (i) It does not require a foundation and so can be easily erected anywhere. (ii) It is very compact, occupying only 1.5 x 0.75 m floor space. (iii) The whole ghani can be assembled in four hours at the site, unlike the overhead drive power ghani which requires several days. (iv) The hazard of being hit with moving pestle is eliminated and sc even semi-skilled artisans can be employed. (v) Since the drive system is at floor level, the vibrations in the structure are negligible compared to the overhead drive. This eliminates the chances of misalignment caused by heavy vibrations and improves the life of machine parts. (vi) The oil extraction efficiency increases by about 2%. (vii) Any maintenance work, like changing of belts or lubrication, can easily be done at the level. (viii) Operating and maintenance costs are low.

The machine weighs about 545 kg.

A special feature of the portable power ghani is that seeds like groundnut, mustard, sunflower and coconut can be easily crushed.

For details write to: Mr. V.D. Venugopal, Managing Partner, Vivek Engineers, 20 Bye-pass Road, Vellore 632 004.
(*Invention Intelligence January 1988*, 33-34)

111 Chocolate moulding filler

Depositing caramel and other soft centres into chocolate mouldings has been made easier by a machine from Britain. The "one-shot depositor" from Lamdec performs the functions of several machines (saving space and energy), and is fully programmable (producing different products easily and quickly). It also offers very low product wastage and greater hygiene, it is said. The system employs concentric nozzles, the outer depositing the chocolate while the inner simultaneously deposits the filling. High precision computer control ensures improved product consistency. The system can be tailored to suit a variety of production requirements and is adaptable for all moulding plants.

For more details write to: Lamdec, The Torrs, Torrs Close, Redditch, Worcestershire B97 4JR, U.K.
(Chemical Products Finder March 1988, 87)

112 Chemical pumps

Raj Chemical Pumps, made of all polypropylene/stainless steel 304/316, are available in sizes from 6 to 100 mm, capacity 6 to 800 LPM, and head 3 to 55 metres. These are suitable for food industry surface treatment and chemical industry. The incorporation of mechanical seal/gland packing makes the pumps suitable for transfer of corrosive liquids, filters, and other high pressure requirements.

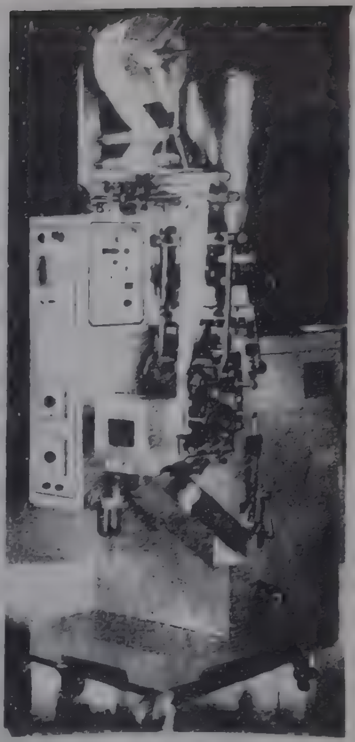
For more details write to: Raj Chemical Pumps, 2/16 Makani Industrial Estate, B.P. Road, Bhayander (East), Dist Thane, Maharashtra.
(Chemical Products Finder March 1988, 95)

113 Infrared heating ovens

Inava Instruments International has introduced modular heating ovens using infrared heating technology for various types of heating applications. Heating systems offered are of patented designs. Object temperatures upto 1,000 C can be achieved within a very short period. A number of heating elements have a temperature resistant, white reflecting layer on its outer side, which is said to save more than 50% of energy. The main advantages of these modular ovens are speed, simplicity, flexibility, waste reduction, zero start-up or shut-down time, fully programmed heating cycle, ease of control, product visibility, cleanliness, controlled atmosphere, safety and economy of space. Heat flux up to 222 kW/m^2 and in special design, ovens up to 600 kW/m^2 are offered by the company. Modular heating oven is suitable for drying and sterilising crockery in hotels, de-hydrating fruits and vegetables, baking and warming foods, drying of cake icing, plastic forming and curing, preheating plastic before moulding, etc. The company can supply standard ovens, portable ovens, as well as tailor-made systems to, cater to specific requirements. Conversion of electrical ovens to infrared heating ovens is also undertaken.

For further information write to: Inava Instruments International, 94 Ratnajyoti Industrial Estate, Irla Lane, Vile Parle (West), Bombay 400 056.
(Industrial Products Finder March 1988, 23)

114 Automatic filling/packing machine



Jyi Maw Industry Co. Ltd., Taiwan, manufactures Automatic Filling/Packing Machine designed through 100% application of high electronic technique. It has special functions such as cartridge system, oil-less system and one-touch transfer system. The machine is of compact design and can use cheap single unit film. It can automatically process filling and packing in desired sizes from a reel of film (1,000 m/reel). It can be operated with automatic balance, counter and automatic feeding system. Packing materials can be single unit film of polyethylene, polypropylene, sholex or highgex. Capacity of packing can be 40 per minute with three sides heat sealing. The minimum and maximum packing size is 100(W) x 50 (L) mm, and 150 (W) x 240 (L) mm, respectively. It can pack liquid, solid, grain, powder, capsules, fertilizers, any food product, medicines, etc. This machine can be imported under OGL.

For further information write to: B.M. Singh & Son, 1 Crooked Lane, Calcutta 700 069.

(*Industrial Products Finder March 1988, 24*)

115 Industrial drying oven

Yorco Air Drying Oven is used for baking breads and biscuits. It is of double walled construction on a heavy angle iron frame. Inner and outer chambers are made of thick mild steel. Inner chamber is coated with aluminium paint and outer is finished with grey hammertone. The 75-mm gap between the walls is well insulated with glass-wool. Temperature is controlled by capillary thermostat from 50 C to 250 C ±5 C. A heavy duty blower is provided to circulate air inside the chamber. Control panel is fitted on one side with an On/Off switch, indicator lamps, and temperature control knob dial thermometer. Adjustable ventilation is provided on top of the roof. The oven is supplied complete with cord and plug to work on 220 V, single phase or 440 V 3 phase AC supply.

For further information write to: York Scientific Industries, Yorco Chambers, 3A Tak Wadi, Kalbadevi Road, Bombay 400 002.
(*Industrial Products Finder March 1988, 39*)

116 Processing plant for chemical/food & pharmaceutical industries

The ESCO-Labor processing plant is an economical, labour saving production plant. It is available in two sizes, having 3 or 10 litre useful volume. The combination of a rotor and stator, a scraper stirrer system and vacuum in one and the same air-tight and sterile working vessel, makes this the first compact system of this scale. This combination ensures intense wet grinding of active ingredients and additives in an undissolved form, homogenising emulsifying and deaeration. It also reduces production time, and ensures a clean working area so that the personnel are not exposed to toxic or caustic material in the air. In this processing plant, all products of liquid, creamy or pasty consistency can be made. The finished product is absolutely homogeneous, looks perfect, is deaerated and ready for filling. The ESCO-Labor processing plants have been designed with hygienic and bacteriological demands on modern production machines in mind allowing easy, quick and thorough cleaning. All the parts of the machines are easily accessible or removable. There are no recesses, cracks or holes, in which product residue could become trapped. Closed hollow chambers, which come into contact with the product, such as the working vessel, can be sterilised by usual methods. Uses in food industry are for: mayonnaise, fruit concentration, sauces, desserts, soups, mustard, etc.

For further information write to: E Schweizer & Co., Stiftsgasschen 16, CH 4125 Riehen, Switzerland.
(*Industrial Products Finder March 1988, 46*)

117 Powder filling machine

Food & Pharma Specialities offers a powder filling machine manufactured by PPM Albro Division of Portals Engg Ltd, U.K. The filling cycle of the machine starts with the lifting of the container against the filling nozzle whereafter the air is drawn out by vacuum and the powder flows into container from the hopper. After the filling level is achieved, the vacuum is nullified. Absence of any moving parts in the filling mechanism and sanitary construction make the machine ideal for milk powder, coffee, spices, powdered soups, instant beverages and pharmaceutical powders. This filling machine is available in semi-automatic and fully automatic models from low to very high speed versions.

For further information write to: Food & Pharma Specialists 22-D, Nizamuddin East, New Delhi 110.013.

(*Industrial Products Finder March 1988, 193*)

118 Pouch making machine

The Pouch Maker from Flexible Packers is designed to produce empty pouches from flexible laminated materials. Two models are available: the PM-1 (for centre and bottom seal), and PM-2 (for three-side seal). Both are fully automatic convertors of flexible laminates into pouches. The machines are pneumatically operated and come with a built-in photo registration unit. The use of pneumatics has been so employed as to obtain a superior seal along with a serrated cut making it easy to tear open the pouch. The machine's dimensions are 48" (W) x 36" (H) x 144" (L), and the weight is 800 kg. Maximum input reel diameter is 20". Minimum draw is 2.5". Maximum draw is 16". Minimum width is 2". Maximum width is 8". The folder is adjustable. The electric eye is reflective type. These pouch making machines are particularly suited to bakery and food industries.

For further information write to: Flexible Packers, 64, Koregoan Park, Pune, Maharashtra 411 001.

(*Industrial Products Finder March 1988, 182*)

119 Steam boiler

Energy Machine has developed highly efficient and safe, fully-automatic steam boilers - "Ecotherm" "Ecotherm" is fully-automatic water tube, oil-fired, once through packaged type steam boiler. It is fitted with highly efficient, adjustable high pressure solid injection burner which ensures high combustion efficiency. The heat is liberated from combustion of oil and evaporation takes place to provide 99% dry and saturated steam. The unit finds applications in industries such as chemical, food, rubber, paper board, plastic, pharmaceutical, textile, fertilizer and pesticide.

For more details write to: Energy Machine, C1,B/423 II Phase, GIDC Estate, Vithal Udyognagar, Gujarat 388 121.
(*Chemical Products Finder* 6(11), 1988, 97)

120 Tray driers

Indian Equipment Corporation manufactures Tray Driers used in pharmaceutical, chemical, dyes, food and other process industries, and in sericulture, drying of grapes, fish, etc. Standard driers are available in capacities of 12, 24, 48, 96 and 192 trays of the size 32" x 16" x 1.25" or 32" x 16" x 4", suitable for temperature to 300 C or higher. Temperature control is by a solid state electronic controller with presetting arrangement. Electric or steam heating arrangement can be provided.

For further information write to: Indian Equipment Corporation, Plot 102, Street 13, MIDC, Andheri (E), Bombay 400 093.
(*Industrial Products Finder* 16(7), 1988, 28)

121 Finned water coolers

Thermotech Industries manufactures finned water coolers, for industrial use up to 500 TR capacity. These systems make use of finned tubes. Fins are air-cooled by natural convection or forced convection with the help of fans. Advantage of this system is that it does not depend on the evaporative system of cooling like in cooling towers. This solves the problem of metal corrosion which is a usual phenomenon due to increased moisture content when the cooling towers are installed indoor. This unit can be installed inside the factory avoiding the long pipelines to take the cooling system to the top of building or outdoor. Thermotech finned water coolers are ideal to be used along with pharmaceutical, food and other process industries.

For more details write to: Thermotech Industries, 13 Vishal Industrial Estate, Village Road, Bhandup, Bombay 400 078.
(*Chemical Products Finder* 6(11), 1988, 84)

122 A"thinking"slicer for food shops

After several years of research and development, an Austrian firm, Kuchler Electronics, has come out with a "thinking" slicer for culinary purposes.

The SAM-ALPHA 8 slicing and stacking machine makes use of microprocessor technology. After cutting a given foodstuff (meat, sausage, cheese, etc.), it automatically lays out the slices. A mere touch of the sensor buttons with their optical light displays is enough to programme the exact amount and shape. The machine can thus be used to create highly decorative platters of cold food which comply with the most stringent hygiene regulations because they do not, at any stage, involve contact with human hands.

The device electronically ascertains the diameter of the material to be cut and can thus place each slice exactly in the desired position. It can be programmed to arrange the slices in piles, in diamond shapes, in vertical or horizontal rows or in a circular pattern to fit onto a round plate. Moreover, each arrangement pattern can be stored in the device's memory and hence repeated whenever needed. The company also offers several peripheral devices like built-in cellophane strip dispenser.
(*Asia-Pacific Tech Monitor January-February 1988*, 6)

123 Rice flour noodles machine

The rice flour noodle machine has a capacity of 200 kg/hr with a overall size of 8000 x 600 x 1800 mm. The system consists of electric heating streamer, evaporating conveyor, cooling conveyor, and noodle cutter. Cutters are available in different sizes (widths). The auxiliaries include wet grinder, container pump and switchboard. The noodles produced are flat with 1 mm thickness and 5 to 10 mm width. The machine is already commercialised in China, Thailand, Malaysia, Indonesia and Canada. It is offered by China National Machinery Import and Export Corporation (CMEC), Peoples Republic of China.
(*Asia-Pacific Tech Monitor January-February*, 1988, 26)

124 Automatic soft drink dispenser

Dynamic Control Systems offers an automatic soft drink dispenser which works on 230 V AC single phase and is meant for dispensing flavoured aerated chilled drinks. Three types of concentrated flavoured syrups and drinking water are stored in separate stainless steel tanks in the machine. There is also a CO_2 gas cylinder inside the machine. The stored water is chilled by refrigeration system. When the desired flavour is selected with a selector switch and a pushbutton is pressed, the internal mechanism is actuated to deliver the selected flavour and soda water simultaneously but separately. The delivery action automatically stops when the preset quantity of drink is dispensed. The machine is suitable for use in industrial and office canteens.

For further information write to: Dynamic Control Systems, DCS Block No.11, 43/2 Erandwana Industrial Estate, Behind Rescon Co., Karve Road, Pune, Maharashtra 411 004.
(*Industrial Products Finder* 16(8), 1988, 111)

125 Food extruders

Hytek Machine Tools manufactures a range of single screw food extruders to produce various shapes of pre-cooked, expanded fast food items from rice, corn, semolina, soya, starches and pulses. The present manufacturing range covers four extruders of capacities ranging from 25 to 50 kg per hour. The machines are robustly built, simple to operate and easy to maintain. The company has already installed more than 35 units throughout India and abroad.
(*For* further information write to: Hytek Machine Tools, E-19 Sector IX, NOIDA, Uttar Pradesh 201 301.
(*Industrial Products Finder* 16(8), 1988, 137)

126 Biscuit stacking machine

Russo Electronic Industries manufactures biscuit stacking machine. It uses a precision control circuit that helps in cutting and stacking of biscuits in the required size and shape. Model Soni-I performs stacking of biscuits only. Model Soni-II performs stacking and cooling. The machine can be used in single as well as three phase.

For further information write to: Russo Electronic Inudstries, Subhash Nagar, Kalyan-Ambarnath Road, Ulhasnagar, Dist. Thane, Maharashtra 421 003.
(*Industrial Products Finder* 16(8), 1988, 170)

PACKAGING

127 Corrugated box units in crisis

With 67 per cent of the capacity lying idle. the corrugated box manufacturing units are facing a serious crisis.

Of the 1,000 units in the country, 40 per cent are sick and are on the verge of closure, according to Mr. Satish Kapur, President of the Federation of Corrugated Box Manufacturers of India. Higher prices coupled with poor quality of kraft paper, the main raw material of the industry are the main problems being faced by the industry today. Recently, paper mills had increased the price of kraft paper, upsetting the production schedule of many small units. The industry consumes about 4.4 lakh tonnes of kraft paper per annum.

Moreover, Mr. Kapur said, the quality of the paper supplied by mills is very poor compared to the international standards. He urged the Government to allow kraft paper import at a reduced rate of duty. The present import duty is as high as 180 per cent.

The Federation has also demanded that the Government allow import of certain sophisticated machinery under OGL at 40 per cent duty, against 85 per cent levied at present. This would enable the industry to modernise its equipment and to manufacture quality products. Although the industry is included in the SSI sector, the Government had recently issued a licence to the Himachal Pradesh Government to set up a large scale unit to produce two crores of boxes per annum. The Jammu and Kashmir and Uttar Pradesh Governments had also received licences to set up similar projects.

The Federation has, therefore, urged the Government to cancel these licences for the very survival of the small units. The industry, having an annual turnover of Rs.450 crores provides protection to five per cent of the gross national product, Mr. Kapur said.
(*Financial Express* 3 May 1988, 3)

128 Flexible packaging for longer shelf life

The shelf life of foodstuffs and drinks sensitive to oxygen and/ or moisture can be extended by packaging in a range of high-barrier films and laminates available from Britain. Camvac films and laminates can be tailored precisely to the properties demanded by many applications. Multi-ply composites of a wide range of metallized films, including polyesters, polypropylenes, polyethylenes and nylons can be supplied in widths up to 2.2 metres. Oxygen permeabilities start from as low as 0.2 ml per m^2 per day, and moisture vapour transmission rates can be close to zero, offering a barrier comparable to aluminium foil but with good resistance to pinholing when flexed to be applied. The laminates have a bright metallic appearance receptive to print, allowing attractive and eyecatching graphics to be applied. Triple laminates, offering the highest barrier, can be supplied with different thickness and seal characteristics. They are particularly suitable for bag-in-a-box wines and offer a shelf life of up to 12 months. Bilaminates are ideal for vacuum-packing applications, pouches or box liners. A cost-effective alternative to foils or rigid containers, they include materials with a variety of sealing characteristics, all offering high strength and flex resistance combined with good barrier properties. Camvac films and laminates are produced in what is believed to be Europe's most advanced plant for metallizing plastics material. A 2.2 metre width capability covers barrier materials from the smallest snack-food product up to liners for 1 tonne-capacity intermediate bulk containers for food and drink.

For further information write to: Camvac Ltd., Burrell Way, Thetford, Norfolk IP24 3QY, U.K.
(*Industrial Products Finder* 16(8), 1988, 203)

129 Aseptic packaging systems

Central India Packaging offers Bowater Aseptic Liquid Packaging machines and bags. Aseptic packaging is suitable for low and high acid products eliminating processing contamination and allowing transportation and storage at ambient temperatures. Various types of products such as juices, ketchups, pastes and concentrates of fruits and vegetables, milk and milk products, can be packed and stored at ambient temperatures for long time. Pack sizes range from 3 to 250 litres all of which can be filled on the same machine with minor adjustments. Various sizes of filling machines are available for packing 1,000 to 6,000 litres per hour. Fully automatic machines with higher filling capacities are also available. Various types of models to operate on a unit basis or part of an integrated automatic filling line can be supplied. Standard sterilants can be used for cleaning the machines. The aseptic bags come in sizes from 3 to 250 litres with strong laminates to withstand handling and storage. The bags come with various types of closures including press tap for easy dispensing of liquid products.

For further information write to: Central India Packaging Co Pvt. Ltd., 3-6-140/2 Liberty Road, Himayathnagar, Hyderabad, Andhra Pradesh 500 029.

(Industrial Products Finder 16(9), 1988, 188)

130 Packaging for ghee

Ghee during storage undergoes chemical changes. The net effect of these chemical changes is oxidative deterioration and is catalysed by air, light, temperature, humidity, metals, etc. Thus, packaging material, used has an important role in the storage of ghee. In general commercial ghee is packaged in tin containers. Tin packaging has certain limitations; a large capital outlay for the equipment and the additional distribution costs involved in carrying the dead weight of the tin containers. The dairy industry has shifted towards polyethylene packages because of low cost and easy handling.

Ghee samples were packaged in tin and polyethylene packages and stored at 37 C for 195 days. Samples were analysed every other week for free fatty acids (FFA), peroxide value (PV) total carbonyl content (TCC), moisture content (MC) and flavour score (FS). Ghee packaged in tin had higher average FFA, PV TCCC and MC as compared to ghee packaged in polyethylene. In contrast to results of various chemical parameters, ghee in tin packages had a higher average level of FS as compared to ghee packaged in polyethylene. Differences in FS became almost negligible at the end of the storage period. Though a strong recommendation cannot be made, yet keeping in view the results of chemical parameters, negligible flavour differences at the end of the storage period, involvement of low cost and easy handling, polyethylene packages should be preferred to tin packages for storage of ghee.

(Indian Food Packer 42(2), 1988, 94-95)

COMMERCIAL INTELLIGENCE

PRODUCTION (RAW MATERIALS)

131 Papaya production in India

The information on the production and area of Papaya in different States recently published by the National Horticulture Board, Gurgaon (Feb. 1988 publication) is given below:

State	Area in hect.	Production in tonnes
Arunachal Pradesh (1985-86)	198	540
Assam (1985-86)	4499	72,833
Gujarat (1986-87)	33300	1,65,000
Karnataka (85-86)	5578	2,23,120
Kerala (85-86)	9780	43,268
Madhya Pradesh	985	8,865
Manipur (1986-87)	700	8,400
Meghalaya (85-86)	363	3,425
Mizoram (1986-87)	67	820
Nagaland (1985-86)	2	2.2
Orissa (1986-87)	5782	54,929
Rajasthan (1985-86)	288	2,717
W. Bengal (1986-87)	140	3,500
Andaman Nicobar (1986-87)	190	950

(Courtesy: All India Food Preserver's Association, New Delhi-16)
Circular No. 30/88 dated 12.5.88.)

132 Spices production

Name of spice	Area (hect)	Production (M.T.)
Cardamom (Small)	1,00,000	3800
Cardamom (Large)	25,685	3500
Pepper	1,23,240	34340
Chilly	8,77,800	708900
Ginger	53,330	130030
Turmeric	1,04	300000
Cumin	1,51,469	78500
Coriander	3,29,899	134433
Fennel	17433	20042
Fennel/Greek	30079	30696
Saffron	2,000	5500 kg

(*The tconomic Times 19 May 1988, III*)

133 Milk industry performs well despite drought

Milk production has increased by four per cent despite drought and floods in some parts of the country last year.

Infact the increase was more than the target set for the year 1987-88.

The target set for 1987-88 was 45.9 million tonnes as against an achievement of 46.1 million tonnes.

The country today has 252 dairy plants with a combined output of about 122,00,000 litres of milk per day. The production of milk-powder during 1987 is estimated to have reached 1,00,000 tonnes.
(*Economic and Commercial News 23 April 1988, 9-10*)

134 All India spices production, 1985-1986

(Production in tonnes)

State/ Union Territory	Black pepper	Chillies	Ginger	Turmeric	Coriander	Cardamom	Garlic
Andhra Pradesh	-	3,09,400	5,522	1,32,700	20,700	-	811
Assam	-	6,281	-	5,591	-	-	-
Bihar	-	10,770	1,018	7,095	2,179	-	4,994
Gujarat	-	9,400	350	-	-	-	15,800
Haryana	-	12,100	20	-	113	-	8,444
Himachal Pradesh	-	163	747	-	-	-	-
Jammu & Kashmir	-	409	-	-	-	-	124
Karnataka	692	40.598	3,311	14,247	1,114	1,586	2,267
Kerala	29,165	915	40,152	5,365	-	2,803	-
Madhya Pradesh	-	11,063	3,526	339	13,426	-	41,185
Maharashtra	-	71,500	578	12,748	-	-	25,000
Manipur	-	2,500	180	-	-	-	-
Meghalay	-	1,057	28,560	1,800	-	-	-
Nagaland	-	2,200	210	-	-	-	600
Orissa	-	76,510	14,654	31,575	10,305	-	66,385
Punjab	-	7,800	-	-	-	-	3,338
Rajasthan	-	30,650	1,482	345	36,706	-	3,257
Sikkim	-	-	9,400	-	-	3,840	-
Tamilnadu	534	58,359	1,536	1,01,061	19,857	616	840
Tripura	-	677	1,167	1,556	-	-	-
Uttar Pradesh	-	22,997	6,277	859	2,188	-	12,642
West Bengal	-	30,578	6,821	8,030	-	580	..
Arunachal Pradesh	-	678	3,594	255	-	-	-
Delhi	-	198	-	-	-	-	-
Mizoram	-	1,779	5,000	-	-	-	-
Pondicherry	6	111	-	-	-	-	-
ALL INDIA	30.397	7.08.693	1,34,105	3,23,566	1,06,588	9,425	1,87,187

(*Agricultural Situation in India*, October 1987, 649-665)

135 All India Production of Onion, 1985-1986

(Production in tonnes)

Andhra Pradesh	1,25,800
Assam	11,180
Bihar	1,19,510
Gujarat	4,77,700
Haryana	43,296
Himachal Pradesh	1,693
Jammu & Kashmir	830
Karnataka	1,96,620
Kerala	2,709
Madhya Pradesh	1,42,949
Maharashtra	6,43,000
Nagaland	400
Orissa	3,82,090
Punjab	27,600
Rajasthan	47,779
Tamil Nadu	2,32,105
Tripura	195
Uttar Pradesh	4,13,024
Delhi	1,300
Pondicherry	85
ALL INDIA	28,69,863

(Agricultural Situation in India October 1987, 666-669)

PRODUCTION (Industrial)

136 Installed capacity and production

Product	Unit	1985-86			1986-87		
		No. of units	Installed capacity	Production	No. of units	Installed capacity	Production
Biscuits	Lakh T	33	1.48	1.35	33	1.48	1.28
Confectionery	Lakh T	22	0.36	0.23	22	0.36	0.26
Bread	Lakh T	21	1.22	1.20	21	1.68	1.22
Pearl barley	000 T	4	6.59	0.81	4	6.59	1.10
Corn flakes	000 T	3	2.55	0.45	3	2.55	0.56
Oat flakes	000 T	1	0.02	-	1	0.02	-
Macaroni,vermicilli/ noodles etc.	000 T	5	33.40	8.71	5	33.40	9.30
Malt extracts	000 T	5	11.30	6.66	5	11.30	7.00
Guargum	000 T	9	46.00	27.53	9	46.00	28.80
Weaning food	000 T	3	10.30	9.37	3	10.30	9.50
High protein food	000 T	9	13.61	6.12	9	13.61	7.20
Cocoa butter substitute	000 T	1	3.00	0.17	1	3.00	0.23
Egg powder	000 T	1	0.30	0.06	1	2.67	0.07
Starch	Lakh T	11	2.67	1.34	11	1.06	1.42
Glucose	Lakh T	12	1.06	0.50	12	8.50	0.52
Chocolates	000 T	6	8.50	7.26	6	1.50	7.60
Drinking chocolates	000 T	3	1.50	0.27	3	0.64	0.36
Cocoa powder	000 T	5	0.60	0.23	5	3283	0.24
Soft drinks	M.bottles	60	3283	1850	60	1.32	1860
Beer	Lakh Kl.	32	1.32	1.99	32	-	1.99

(Financial Express 26 April 1988, 12)

137 Sugar production

According to the Indian Sugar Mills Association, the sugar production during the second fortnight of April, 1988 (i.e. 16.4.88 to 30.4.88) was about 5.40 lakh tonnes as against 4.29 lakh tonnes during the same fortnight last year. This brings the total output during the season 1987-88 to 82.43 lakh tonnes against 77.44 lakh tonnes during the corresponding period last year.

The closing stock of sugar as on 30.4.88 was 55.12 lakh tonnes, comprising of 54.06 lakh tonnes indigenous sugar and 1.06 lakh tonnes of imported sugar in all, inclusive of stocks held at the ports and the FCI godowns at different consuming centres. The corresponding figures of stock at the end of April, last season was 51.47 lakh tonnes comprising of 50.81 lakh tonnes indigenous sugar and 0.66 lakh tonnes imported sugar.

(Indian Sugar Mills Association, Press Release, 3 June 1988)

EXPORT

138 India's exports of processed foods

Item	Quantity (tonnes)	Value in Rs.lakhs	Quantity (tonnes)	Value in Rs.lakhs
Fruit juices	8814	533	5000	300
Other canned and bottled fruits	30320	3401	50000	4500
Canned vegetables	971	172	1800	200
Dehydrated vegetables	1128	167	1800	200
Pickles and chutneys	5700	620	9000	900
Fresh meat	9378	2297	15000	3700
Frozen meat	36064	4584	45000	5700
Canned meat	1376	321	-	500
Poultry products	-	54	-	100
Animal casings	-	232	-	300
Mushrooms	68	1013	-	1200

(Financial Express 26 April 1988, 12)

139 Record earnings from spice export

Earning from exports of spices created a new record at Rs.286.35 crores during 1987-88 as against Rs. 281.99 crores in 1986-87. The previous record earning from spices was Rs.282.52 crores in 1985-86.

Pepper contributed largely to the increase in export during 1987-88 with an export of 39,340 tonnes valued at Rs. 230.12 crores as against 37,083 tonnes valued at Rs. 200.33 crores in 1986-87. The earning from pepper was more than 80 per cent of the total export earnings from all spices during 1987-88.
(*Financial Express* 1 May 1988, 7)

140 Spices productivity and export

Name of spice	Productivity (kg/ha)	Export quantity (in M.T.)
Pepper	280	37,500
Cardamom	52.5	3,272
Large cardamom	147.0	383
Chillies	800-1050	1,241
Turmeric	2402.0	8,561
Ginger	not known	6,816
Coriander	407.0	1,863
Cumin	518.0	1,061
Celery	not known	2,625
Fennel	1,149.0	1,324
Fenugreek	not known	2,394
Nutmeg & Mace	-do-	2.1
Clove	-do-	216 kgs
Cinnamon	-do-	516 kgs
Cassia	-do-	233
Tejpat	-do-	not known
Garlic	-do-	2,619
Saffron	-do-	103 kgs
Vanila	-do-	not known
Curry leaf	-do-	0.5
All Spice	-do-	not known
Aniseed	-do-	0.5
Mint	-do-	not known

contd.

140 contd.

Name of spice	Productivity (kg/ha)	Export quantity (in M.T.)
Mustard	not known	120 kgs
Parsley	-do-	not known
Pomegranate seed	-do-	-do-
Kokam	-do-	-do-
Bishops seed	-do-	245
Dill seed	-do-	534

(The Economic Times 19 May 1988, III)

141 Export pepper inspection by agencies

Export inspection agencies have also been authorised by the commerce ministry to carry out pre-shipment inspection of black pepper for export.

So far, the agricultural marketing adviser to the Union government was the only competent authority to certify the quality of black pepper which is subject to compulsory inspection and testing.

The commerce ministry issued the notification authorising the export agencies to carry out inspection through a notification issued on March 7, according to a press release issued by the ministry here today.

The exporters, thus, can approach any of the inspection agencies for getting the consignments of black pepper inspected prior to exports.

The notification, which is effective from March 7, explains that the export of black pepper is not permitted unless it conforms to the standard specifications applicable to it and is accompanied by a certificate of inspection issued by the Union agricultural marketing adviser or by any of the export inspection agencies established under the Export (Quality Control and Inspection) Act.

Black pepper" shall mean the black pepper either powdered or whole produced in India".

The export inspection agencies now cover a wide range of goods like engineering, food and agricultural products, chemicals and allied

products, footwear and footwear components, mica, jute and jute products, fish and fishery products, coir and coir products and carpets. None of these commodities can be exported unless the consignments conform to the specifications recognised by the government under the Act and certified to this effect by any of the agencies.
(*The Economic Times* 17 March 1988, 4)

142 US lifts ban on Indian black pepper

The US has conditionally lifted its ban on Indian black pepper.

A Spices Board press release here said the Federal Drug Administration (FDA) of the US has agreed to lift "automatic detection" on Indian black pepper provided export consignments were accompanied by a statement from the Export Inspection Council certifying that they conform to FDA standards.

The FDA took the decision to lift the automatic detention, effective since July 24, 1987, following discussions between FDA Director, Mr. Richard Ronk, and the Union Commerce Joint Secretary, Mr. M.R. Sivaraman, in Washington recently.
(*Financial Express* 23 April 1988, 1)

143 Marine items export target

Export target of Rs.470 crores has been fixed for marine products for the year 1987-88.

An official release issued by the Marine Products Export Development Authority here said that the exports of marine products, effected from India during the first six months of the current financial year had risen to 45319 tonnes valued at Rs. 243.6 crores. This was the highest on record for the first half of any year, the release said.

The export growth achieved during the current year worked out to 13 per cent in terms of quantity and 14 per cent in terms of value. The average unit value realisation of exports also marginally increased.

The items which contributed to the export increase were frozen shrimp, frozen cuttle fish, frozen lobster tails, frozen squids and fresh or frozen fish.

Japan, the US and western Europe were the major markets for the Indian marine products. Japan continued to be the principal market accounting for an export earning of Rs. 152.8 crores or 18668 tonnes in quantity terms. During the six-month period exports to Japan marginally increased both in terms of quantity and value. Exports to the US also registered a marginal increase Rs.40.5 crores (7865).

In regard to western Europe while quantum of exports increased to 9077 tonnes from 8725 tonnes, the export earnings marginally declined to Rs.31.8 crores from Rs. 31.9 crores exported during the corresponding six-month period last year.
(Seafood Export Journal 20(2), 1988, 41-42)

144 Soft drink exports

Year	Quantity lakh litres	Earnings Rs lakh
1981-82	0.9	6.0
1982-83	10.8	86.7
1983-84	19.9	158.3

(The Economic Times 12 May 1988, III)

145 Procedures for exports simplified

Exporters would no longer have to submit copies of export contracts and orders as part of the procedural formalities. Mr. R.L. Mishra, Chief controller of imports and exports announced here today.

Henceforth, only a certificate from a chartered accountant will have to be submitted along with the application, he said in his address at a workshop on export and import-policy organised by the Federation of Indian Export Organisations (FIEO).
(The Economic Times 12 May 1988, 1)

146 Gum karaya exports fall

Exports of gum karaya has registered a sharp fall during the last two years following canalisation and exporters are hard put to fulfil their export coutracts, reports UNI.

According to reports, the exports of gum karaya which was around 350 tonnes per month have scaled down drastically to less than 150 tonnes per month after canalisation.

Citing the reasons for the sharp decline, traders said as per the conditions imposed by the exports trade control order, exports of gum karaya are now permitted by Nafed only against purchases made from state government corporation and authorised co-operative societies.

However, there are only three such recognised socieites in the country, Andhra Pradesh, Maharashtra and Gujarat of which only one society supplies the majority of the gum. Together they are unable to meet the supply of more than 2,000 tonnes of gum karaya against an annual export demand of 4,000 tonnes.

Traders said that while the principle objective of canalising exports to safeguard the welfare of tribal community, yet when it was put into practise canalisation has adversely affected their welfare.

Although the government has made provisions in the notification that in event state corporations/cooperative societies are not in a position to meet export requirement, Nafed should obtain prior permission of the ministry of welfare to seek supplies from alternate sources for the purpose of export. Yet this procedure is quite combersome and time-consuming, traders said.

Moreover, traders said, there are several complaints from exporters and foreign buyers about the poor qualities of products supplied by co-operative societies due to negligence and as a result India is losing the international market and buyers are exploring and seeking supplies from African countries.

Short supplies of gum karaya to the processing units have resulted in unemployment and nearly 50 per cent of the workers of these processing units have been laid-off since many exports have forced to shut down their factories.

The gum merchants' association has recently requested the chief controller of imports and exports that in the larger interest of export promotion and to assist the organised and unorganised tribals, canalisation should be removed. Till such time the stipulation of purchase of gum karaya for exports from state government corporation/ authorised co-operative socieities may be withdrawn immediately as these would enable tribals to collect and supply gum karaya for exports.

The association also requested that to safeguard the interest of tribals, possibilities may be examined to fix the 'floor prices" in consultation with gum merchants' association, Nafed, tribals societies, etc. as has been done in some of the agricultural commodities.

If the above suggestions are accepted, the trade is confident that exports of gum karaya could be restored to 4000 tonnes within the next couple of years and exports earnings from gum karaya to shoot up to Rs. 15 crores, traders added.

(The Economic Times 16 May 1988, 10)

147 Cashew kernels export up

India exported 38,598 tonnes of cashew kernels valued at Rs. 340.29 crores in 1987 registering a 14 per cent growth in export earnings over the previous year.

The average unit price during the period under review was Rs.88.16 per kg as against Rs. 78.32 per kg in 1986, according to the Cashew Export Promotion Council.

The US (12,942 tonnes), the Netherlands (7,028 tonnes) and the Soviet Union (3,099 tonnes) were the major buyers.

The country imported 45,515 tonnes of raw cashew in 1987 as against 44,210 tonnes in the previous year.

(Financial Express 6 April 1988, 8)

148 Tea export outlook

A substantial reduction in the volume of tea exports by the year 2000, because of rising domestic demand and prices, is indicated in a recent study by the Indian Tea Association (ITA). If India is to remain a major force in the global tea market, corrective policy measures and suitable incentives, as well as concessions, are necessary.

For supporting the current export level of around 200 million kgs by the turn of the century, Indian tea output would have to exceed 1,000 million kgs, which would help maintain domestic price stability as well as internal demand which is rising at an annual rate of almost 4 per cent.

As against these projected figures, the study notes that tea production based on current trends is likely to be only 820 million kgs by the year 2000, while the domestic demand would be 780 million kgs, thus leaving only 40 million kgs for exports.

The Indian Tea Board has set an output target of 1,200 million kgs by the end of the century, but the study feels that this is beyond achievement as the output shows an annual increase of only 12 million kgs. Besides, if the producer gets better prices in the home market, he has little incentive to export tea.

The ITA study wants the government to sanction adequate concessions to the tea industry for maintaining the current export levels by augmenting production and keeping enough stocks to contain the domestic price rise.

It notes that Kenya, Argentina, Sri Lanka, Indonesia and Malawi have weak domestic demand for tea and could export cheaply, depressing world prices.

(*The Economic Times* (16 April 1988, 3)

149 High prices of S. Indian teas deter importers

Importers from the U.S., Canada, the U.K., Australia and Europe have complained of high prices for South India teas.

Participating in different panel discussions at the South India tea convention held by UPASI here on Monday, the delegates from these countries advised the Indian exporters to advertise intensively in their markets.

The representatives from the US said that there is good scope for the export of South Indian teas to their country because North Indian teas are not suitable for the preparation of iced tea which had a large chunk of their market. They also advised the exporters to attach importance to the health aspects and supply of decaffeinated teas.

They pointed out that at a recent convention in East Africa, Kenya has announced its plan to double its tea production. This will lead to a glut and consequently a price crash, Mr. Brian Macauley of Canada said that the imports into his country from South India was nil in 1987. The increased price of Indian teas compared to Indonesia and Sri Lanka is the reason. He, however, said that there is scope for the export of tea bags.

Mr. Peter Gridley of the U.K. observed that his country now bought more teas from Brazil, Dr. R.D. Lal of Tata Tea said that South India will introduce instant tea of high quality to suit the sophisticated Western market.

Mr. R.K. Tripathy, Chairman, Tea Board, pointed out that India is a signatory to the FAO stipulations on quality and assured that there can be no compromise on the quality of Indian exports. He requested the importers to pay prices which matched the quality.

Mr. R.N. Deogun, who chaired the session, said that the convention will recommend that India should go out to market its teas as there is room for further exports.

(Financial Express 26 March 1988, 8)

150 Export of oilseeds extractions and cakes

Year	Production of extraction MT	Ceiling fixed by the Govt. for the exports MT	Actual quantity extractions exported MT	FOB Value Rs. Crore	% of export compared to ceiling
Deoiled rice bran (rice bran extraction)					
1985-86	13,30,000	5,40,000	2,97,650	15.52	55
1986-87	14,50,000	5,40,000	3,80,100	29.07	70
1987-88 (Est)	16,00,000	5,40,000	3,50,000	27.05	65
Deoiled groundnut cake extraction					
1985-86	5,50,000 (Est)	4,00,000	1,64,021	28.25	41
1986-87	6,50,000 (Est)	4,00,000	2,86,753	53.73	72
1987-88(Est)	6,00,000 (Est)	4,00,000	2,65,000	65.00	66
Cottonseed extraction					
1985-86	59,000	6,00,000	35,908	4.05	6
1986-87	1,09,000	6,00,000	53,083	6.81	9
1987-88(Est)	79,000	6,00,000	22,747	4.52	4
Cottonseed expeller cake					
1985-86	18,38,000	25,000	12,448	1.13	50
1986-87	19,35,000	25,000	70	0.01	0.28
1987-88(Est)	16,47,000	25,000	Nil	-	-

(The Economics Times 16th April 1988, 3)

151 SC ruling on frog legs export

Frozen frog legs are the same as fresh frog legs and their export is entitled to the benefit of Section 5(3) of the Central Sales Tax Act, 1956, the Supreme Court has ruled.

"The process of freezing them is only to avoid decomposition and this process does not bring any material change in them", the Court added.

The ruling was handed down by a division bench comprising Mr. Justice Sabyasachi Mukhverji, and Mr. Justice S. Ranganathan, while upholding a judgement of Sales Tax Appellate Tribunal, which was confirmed by the Kerala High Court. The judges, thereby dismissed in appeal by the Deputy Commissioner of Sales Tax (Law), Board of Revenue (Taxes), Ernakulam, challengingthe verdict of the High Court.

The assesse respondent, Shiphy International, Alleppy, had purchased fresh frog legs and exported them frozen after removing the skin, washing and removing dirt. The assessee claimed that it was entitled to the benefit of Section 5(3) of the Act.

The tribunal found that what was purchased by the assessee was fresh frog legs and after freezing it for the purpose of avoiding decomposition and decay, it was exported. It was, therefore, held by the Tribunal that what was purchased as fresh frog legs was exported by the assessee.

It was contended on behalf of the State that what was purchased was fresh frog legs and the same was not exported as it was frozen first before exporting it.

The tribunal held that only frozen frog legs were exported. Therefore, it followed that what was purchased and exported was one and the same commodity. The frozen frog legs did not undergo any material change in character. The Tribunal, therefore, held that the assessee was entitled to the benefit of Section 5(3) of the Act. The High Court accepted the view. Thus the appeal before the Supreme Court.

The Supreme Court said every processing does not bring about a change in the character and identity of a commodity. The nature and extent of processing may vary from one case to another, the court said.

(Financial Express 21 March 1988, 5)

152 Export incentives against bank certified invoice allowed

An official press note of the CCI & E, New Delhi, revealed that the office of the Chief Controller of Imports and Exports has agreed to waive the requirement of submitting customs authenticated invoices when exporters were furnishing invoices duly authenticated or verified by the nationalised banks and exporters.

Exporters will be allowed export incentives on the basis of bank certified invoices instead of customs authenticated invoices.

The Federation of Indian Export Organisations had brought to the attention of the Chief Controller, the difficulties in submitted copies of invoices duly authenticated by the customs for claiming export incentives like replenishment licences and the like. Many exporters had said that copies of the invoices were not received back by them and created problems.

(Seafood Export Journal 20(2), 1988, 41)

153 Ginger exports hit all-time low

Ginger exports this year have fallen to an all-time low, along with the overall crop of ginger. Exports in 1987-88 have been a mere 1,500 tonnes so far, compared to 4,000 tonnes during 1987 and 7,500 tonnes during 1986. Traders feel the likelihood of further export-orders this year are small.

The main reason for the progressive fall in dry ginger export is that stocks have been piling up at Jeddah, India's main market, after yemen began tightening its controls on ginger-smuggling in 1985. Yemen formerly accounted for about 60 per cent of India's exports to Jeddah, traders say.

Dry ginger exports last year were 3,000 tonnes to Saudi Arabia and 1,000 tonnes to Europe. This year, Europe has the lion's share of India's meagre exports.

The ginger crop of 1987-88, at 25,000 tonnes, was the lowest ever recorded, owing to large scale diversion of land in Kerala and Karnataka to pepper cultivation. Consequently, the production of the low priced 'Shimoga dry ginger has been negligible. The production of dry ginger this year was a scant, 5,500 tonnes, but even for this there has been little demand owing to the 5,000 tonnes stock carried over from the previous crop.

The price of fresh ginger has risen since last year but dry ginger has failed to keep pace. Consequently, most of the crop was sold fresh in the domestic market. Even so, traders expect a large carry-over of dry ginger this year also owing to low demand.

The prices of dry ginger are presently Rs.22 per kg in Bombay and Rs.20 at the production centres in Cochin and Calicut. The latter had risen as high as Rs.24 in March this year from Rs.19 at the start of the season in January. It is felt that the prices may not rise this year to the level of Rs.26 that had come to prevail after July last year.

Indian ginger is fancied abroad for its high quality, so that it finds a market even in the face of low prices offered by China - about Rs.700 less than the Rs. 1,900 per quintal, FOB at Cochin. As recently as 1985, India held 90 per cent of the international market in ginger, both fresh and dry. This year, export of fresh ginger has been negligible.

(*The Economic Times* 24 May 1988, 2)

154 CCI okays meat export

The Chief Controller of Imports and Exports has decided to allow the export of Buffalo meat within a limited annual ceiling of 100,000 tonnes subject to a minimum export price of Rs.11.50 per kg, FOB for the year April 1988 to March 1989.

It has also been decided to release a ceiling of 11,000 tonnes of sheep meat and 5500 MTs of goat meat for export, during this period. The two categories of meat are being released subject to a reservation of 30 per cent of the total ceiling out of the said quantities for export of frozen meat.

Both the exports of goat meat as well as sheep meat will be allowed on outright sale basis and not on consignment basis.

(*Economic and Cpmmercial News* 18(20), 1988, 10)

155 India's share in world exports of selected food items

(Value: US $ Million)

Item	1980 World	1980 India	India's share %	1985 World	1985 India	India's share %
Meat & meat preparations	17832	67	0.4	15732	30	0.2
Fish, crustaceansand molluscs and preparations thereof	12258	242	2.0	14329	326	2.3
Cereals and cereal preparations	41989	201	0.5	30698	35	0.1
Rice	4355	160	3.7	2313	26	1.1
Vegetables & fruits	24018	259	1.1	25387	297	1.2
Sugar, Sugar preparations and honey	16183	46	0.3	5684	45	0.8
Tea and mate	1631	452	27.7	1635	195	12.0
Spices	1072	156	14.5	1059	79	7.5
Oilseed and oleaginous fruit	9487	30	0.3	8221	7	0.1

Source: Economic Survey 1987-88; Ministry of Finance (Economic Division), Government of India.

IMPORT

156 No change in import policy for copra, coconut oil

The commerce ministry has clarified that the import of coconut oil, copra and natural rubber continues to be canalised under the import policy for 1988-89 and therefore there is no change in the policy, reports UNI.

Coconut oil and copra can be imported only by the State Trading Corporation and Hindustan Vegetable Oils Corporation as in the previous years. Since 1985 these agencies have not imported these items, the ministry said in a note.

Regarding natural rubber the ministry said it used to be canalised through the STC and the same policy continues. Import is made only to meet the gap between production and consumption and the STC releases the imported and domestically procured quantities during the lean months.

Regarding spices, the new import policy provides for import of cloves, cinnamon, cassia, nutmeg and mace under Open General Licence (OGL) for stock and sale, the note said. Import of these items has been under the OGL for a long time and only in September 1986 was their import canalised through STC. As there were difficulties in import and distribution, these items required in small quantities, have been allowed for import under OGL.

Import of nutmeg and mace, so far canalised through Nafed, is not significant and has been allowed for import through OGL, the note added.

During the current year the items canalised for import through public sector agencies were reviewed to ensure the objectives of canalisation. Only those items which were bulky in nature or where there were a large number of actual users or where there were advantages in bulk imports have been retained in the canalised list. On this basis imports of cloves, cinnamon, cassia, nutmeg and mace was decanalised, the ministry said.

(The Economic Times 27 April 1988, 12)

157 Import of shrimp by Benelux - new regulations

From January 1988, the import of shrimp by Belgium, Luxembourg and the Netherlands is subject to the following conditions:

1. The shipment has to originate from a company in a third country that is recognised by the ministry of Public Health Working Group, on recommendation of the Benelux country where the application for recognition is put forward.

Recognition of a company takes place after the Special Commission for Health has approved the assurance, provided by the authority in the third country where the company is located, that the company has treated the shrimp in accordance with the hygienic requirements Of the FAO/WHO Recommended International Code of Practice for shrimp and prawns (AC/RCP 17-1978) and that quality control at the company is satisfactory.

2. It should be accompanied by a certificate of health.

3. It will be subject to random sanitary examination, including microbiological examinations.

Details on the certificate and the microbiological standards required may be obtained directly from: Dr. Klass Buchli, Staatstoezicht op de, Volksgezondheid, Postbus 5406, 2280 HK Rijswijk, The Netherlands.

(Seafood Export Journal 20(3) 1988, 33)

TRADE INFORMATION

158 Organised sector - Soft drink industry (without soda) 1987

(Cases in millions)

	COLA		LEMON		ORANGE		OTHERS		TOTAL	
	Cases	M.S. %	Cases	M.S. %	Cases	M.S. %	Cases	M.S. %	Cases	M.S. %
Parle	15.3	36	16.6	52	9.1	42	5.2	54	46.2	44
Pure Drinks	10.2	24	4.1	13	4.9	23	2.9	30	22.1	21
McDowells	1.9	4	3.4	11	2.3	11	-	-	7.6	7
Double Cola	6.0	14	2.0	6	2.5	12	-	-	10.5	10
77	4.3	11	1.0	3	-	-	-	-	5.3	5
Others	4.6	11	4.7	15	2.7	13	1.6	16	13.6	13
Total	42.3	100	31.8	100	21.5	100	9.7	100	105.3	100

(The Economic Times 12 May 1988, II)

159 Vanaspati prices shooting up

The implementation of the vanaspati price control is in jeopardy as a result of an acute shortage of tin containers.

The ruling market price of a 15 kg tin is around Rs.365 against the voluntarily agreed ex-factory price of Rs. 335.

Vanaspati prices started firming up due to constant short supply. The situation is expected to worsen in the near future as the vanaspati producers will be forced to cut down production in the absence of adequate packaging material.

The availability and price situation of tin containers have become grim. During the last three weeks tin prices have shot up from

Rs. 20 to Rs. 30 per tin, a 50 per cent hike and still enough quantity is not available, according to industry sources here.

This has resulted in a cost escalation for the industry, which has already been suffering from substantial uncovered cost escalations on account of recent hike in administered price the sources said.

The industry feels that the situation has arisen largely due to under estimation of the size of the oil can demand. This was followed by lower requisitions of tin mill black plate by tinplate producers from MMTC. Besides, serious delays in the shipment of black plate coils continue.

Cost apart, the availability of tin plate has become extremely scarce, which has begun to have a telling effect on vanaspati production, said a spokesman for the vanaspati manufacturers.

"Unless some remedial steps are taken soon, we expect the situation to snowball into vanaspati shortage precisely by the time its demand picks up on account of rural marriages and local festivals after rabi harvest", the spokesman added.

He suggested certain urgent steps, including immediate permission to use second hand tin containers. "This was done in the past when the problem was not as acute as it is now," he added.

He further suggested that vanaspati units be allowed to import tinplate to meet a quarter of their requirements and also to institute regular review meetings under the auspices of civil supplies ministry, involving the steel ministry, tinplate producers and MMTC, to take stock of the situation.

(*Economic Times* 24 March 1988, 3)

160 Price support scheme for copra

The Union Government has decided to introduce a minimum price support scheme for copra, the Union Minister of State for Agriculture Research, Mr. Harikrishna Sastri, said on Saturday.

Addressing a meet-the-press programme organised by the Alleppey Press Club, he said that with the introduction of the scheme, efforts would be made to announce minimum price on a regular basis to prevent any fall in the price of coconut and copra.

He said an integrated farming scheme in small coconut holdings had been started and 10,000 hectares would be brought under better farming programme. Rs. 9 crores would be made available to the Coconut Development Board during the Seventh Plan for various schemes for coconut development.
(Financial Express 2 May 1988, 1)

161 MEP for basmati rice fixed

The Union government has fixed the minimum export price (MEP) for basmati rice at Rs. 7,500 per tonne.

A public notice issued by the chief controller of imports and exports on April 19 states that the MEP is applicable "with immediate effect".

The export of basmati rice is allowed under open general licence (OGL).

The country exported 2.06 lakh tonnes of basmati rice valued at Rs. 196.3 crores in April-November, 1987. In 1986-87 full year, the exports were of the order of 2.37 lakh tonnes worth Rs. 206.78 crores.
(The Economic Times 23 April 1988, 1)

162 Tea Board office in Lucknow

The Tea Board has decided to open a branch office in Lucknow in the first week of April to coordinate programmes for organising for tea plantation activity in UP.

These measures make it clear that the Union commerce ministry is keen on making a serious bid for organising tea plantation activity in UP, as part of its drive to bring new areas under tea cultivation. An important criterion for extension of the new tea unit financing scheme is that the Tea Board should be satisfied that the identified area will be capable of supporting tea cultivation on a commercial scale.
(Economic Times 24 March 1988, 3)

163 Code of ethics for food industry

A code of ethics for the food industry and trade has been evolved by the Confederation of Indian Food Trade and Industry (CIFTI). It spells out steps to be ensured by the manufacturers and traders of foodstuffs to protect consumer interests. The CIFTI code elucidates eight articles for specific requirements of food standards relating to hygiene, manufacturing practice, nutrition, weights and measures, advertisements, consumer relations and others. The code attempts to supplement and complement national food laws and the quality control infrastructure.

CIFTI is sponsored by the Federation of India Chambers of Commerce and Industry (FICCI).

(*Financial Express 29th June 1988, 9*)

164 Modernise pepper cleaning facilities

A five-year plan to modernise the facilities for cleaning, processing and packaging of black pepper is under way to meet the threat to the pre-eminent position of Indian pepper in the world market.

The market for Indian pepper was seriously affected in the US this year on account of quality problems.

The Food and Drug Administration (FDA) of the US had placed black pepper from India under detection for the last several months from July 1987.

The Government had deputed a high-level delegation to Washington to explain to the US authorities the measures taken by India to ensure quality of Indian black pepper exports.

The US authorities have agreed to lift the automatic detention of black pepper in respect of future shipments from India which are accompanied by a valid certificate from the Export Inspection Council that they conform to the US FDA standards.

Regarding consignments which have already been sent but have not reached the US ports, FDA will waive automatic detention on a selective basis.

The Government has nominated the Export Inspection Agency (EIA) as the authority to inspect export consignments of black pepper.

EIA has been equipped with modern testing facilities and laboratory equipment. It has its own laboratory to check presence of rodent or animal filth and other factors, specified under the FDA regulations.

The Spices Board has initiated short-term measures to improve the quality of black pepper and to ensure that consignments are not contaminated. These measures include improvement of warehouses and godown facilities of individuals and ports, tightening up of the inspection procedure and educating the growers on the need for proper processing, cleaning and packing.

Pepper exporters are being persuaded to use machinery for automatic water washing, drying, grading and removing extraneous matter.

The Spices Board cautioned exporters against selling to buyers abroad below a minimum price, which corresponded to the minimum export price fixed by the Community.

Exporters of MG-I grade pepper were advised against selling below Rs.45,000 per tonne f.o.b. Minimum prices below which other grades may not be sold were similarly fixed. In order to enforce these stipulations, compulsory pre-shipment registration of export contracts was also introduced.

(*Financial Express* 24 May 1988, 4)

165 Industrial licences and letters of intent in December 1987

Industrial licences

Scheduled industry No.27: Food processing industries.

Corn Product Co. (India) Ltd., Shree Niwas House H. Somani Marg Post Box No. 994 Bombay 400 001 (COB): Plot No. 7 & 7A MIDC Indl. Area Thane Belapur Road P.O. Ghansoli Thane, Maharashtra; Corn flour, Custard powder, Jelly crystal, Synthetic Soft Drink Mix, Baking powder, Mayonnaise Sandwich Spread: 1,124 tons.

Letters of indent

Indian Immunologicals 11-4-657, Lakdi-Ka-Pul Hyderabad - 500 004 Andhra Pradesh (NA): Rakshapuram Rajendra Nagar Rangareddy Andhra Pradesh; Rhizobium Culture: 10,00,000 Packets (200 Grams each).

Government Milk Scheme Akola, Murtizapur Road N.H.6, Akola 444 001, Maharashtra (NA); Akola Maharashtra; 1. Milk Powder; 54,75,000 Kgs. 2. Butter: 87,60,000 Kgs. 3. Casein: 4,56,250 Kgs. 4. Ghee: 32,85,000 Kgs.

Pratap Kumar Misra, (M/s Kalinga Trawlings Ltd.), 68/1 Arunalay, Sainik School, Bhubaneswar (NU); Paradeep, Orissa: All varieties of fish: 1,300 tons.

Ruby Marine Foods Pvt. Ltd., 308, Sahid Nagar, (Ist Floor), Bhubaneswar (Orissa) (NU): Paradeep, Orissa; All varieties of fish: 600 tons.

Azia Ocean Foods (P) Ltd., 50-50-40A, Y.P.T. Colony, Visakhapatnam (NU): Visakhapatnam, Andhra Pradesh; All varieties of fish; 600 tons.

Collaborations:

Soyummy Food Products Pvt. Ltd. 8 Camac Street, Suit, 10 Calcutta-17; Marusan-Al Co. Ltd., Japan: Soya Beverages etc.: Financial.

(*Financial Express* 8 April 1988, 11)

FOOD REGULATION, QUALITY CONTROL AND HYGIENE

HYGIENE

166 Irish butter safe from radioactivity

The controversial Irish butter is absolutely safe and the fears of radioactivity are based on misinformation. The Atomic Energy Regulatory Board (AERB) constituted by the government of India is the competent authority for this country for radiological protection and it has allowed more safety margin than other countries, asserted the National Dairy Development Board here.

The NDDB has pointed out that the permissible levels of radioactivity in milk, dairy and other food products fixed by the AERB have been arrived at after due consideration of the threshold recommended by the International Commission on Radiological Protection. The AERB's safety margin is more stringent than other countries and international organisations like FAO and WHO, in arriving at the levels fixed for milk, dairy and other products.

(*The Economic Times* 27 March 1988, 3)

167 States told to ban non-iodised salt

The Union health ministry has asked defaulting states and Union territories to issue a notification banning the sale of non-iodised salt on a priority basis, reports UNI.

These include Haryana, Tripura, Madhya Pradesh, West Bengal, Bihar and Delhi.

This is with a view to achieving the goal of universal iodisation of salt by 1992, which is a part of the national goitre control programme. It envisages legal ban on the sale of salt other than iodised under the Prevention of Food Adulteration Act.

Official sources said it is proposed to increase the production of iodised salt from 7,00,000 tonnes in 1986-87 to 30,00,000 tonnes by 1989-90 to achieve the goal of universal iodisation of salt.
(The Economic Times 18 April 1988, 1)

168 BARC unit monitoring food articles

Samples of all kinds of food articles imported from Central Europe are kept in constant vigilance to test the radiation level at the variable energy cyclotron centre of the Bhabha Atomic Research Centre situated in the northern fringe of Bidhan Nagar (Salt Lake City).

This is being done since the time of the Chernobyl disaster in the USSR as there is a concern among the public that these articles may have been affected by radiation, according to Dr. Bikash Sinha, Director of the centre.

Dr. Sinha says that this research is a continuous process and is being done at Calcutta and at Trombay. "Very rarely but certainly in some cases the radiation level has been found to be more than that allowed by the world standard in this respect," he says adding, "that does not mean, however, that there is anything to be concerned about. "The radiation level of the soil of different parts of India too varies. For example, the radiation level of the soil of eastern India on an average, is higher than that of the western region for many geophysical reasons, particularly mining. In the soil of Kerala, because of the large thorium content, the level of radiation tends to be higher but this has created absoluted no problem for centuries.
(Chemical Weekly 15 March 1988, 61)

169 Irradiation of sea food and spices

Government has decided to permit the MSE of irradiation for sterilizing sea food and spices meant for export after the Atomic Energy (Control of Irradiation of food) Rules 1988 are notified. In addition the "Code of Practice for the Operation of Irradiation Facilities: and "General Standard of Irradiation of Foods" are also being finalised.

The sterilisation process involves selective destruction of spoilage bacteria whereby acceptability and marketability of iced fish is extended by giving moderated doses of about 200 kilorads of radiation. This is the only method for removal of pathogens from prepacked frozen product. Single treatment of Gamma radiation can make spices free of insect infestation and microbial contamination, without losing flavour components. The treatments can also be used for prepared ground spices and curry powders.

(*Yojana* 32(8), 1988, 7)

TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES

170 Maize processor complex in UP

A Rs. 22-crore maize processor complex is to be set up in Bulandshahr district with West German technical knowhow.

The Pradeshiya Industrial and Investment Corporation of UP Ltd. (PICUP) recently collaborated with the Starcosa of West Germany to form a joint sector company for the proposed complex.

Items to be manufactured in this complex include special starches, dextroses, glucose and maltodextrine.

(*Financial Express* 1 April 1988, 4)

171 Fruit juice bottling plant inaugurated

The second fruit juice bottling plant of Modern Food Industries (India) Limited was inaugurated by Mr. Sukh Ram, minister of state for food and civil supplies, here on Monday. The new plant would produce about 18 lakh cases of different varieties of rasika per annum, each case containing 28 bottles.

The minister said Modern Food Industries had an ambitious plan

to set up a Rs. 2.5-crore plant at Silchar in Assam to produce pineapple concentrate. This would be in addition to the fruit pulp unit at Bhagalpur in Bihar set up by the company where mangoes, tomatoes, guava and other fruits are processed.
(The Economic Times 27 April 1988, 6)

172 Two refining units to be set up

Two major refining mills with a total processing capacity of 300 tonnes of oil palm fruits per day were proposed to be set up by Oil Palm India Limited, a joint venture of the governments of India and Kerala, with collaboration of a Malaysian company at Yeroor and Chithava in Quilon district in Kerala, the state agriculture minister, Mr. V.V. Raghavan has disclosed, reports PTI.

He said that encouraged by profitable cultivation of oil palm in Kerala, the government of India had decided to bring new areas under oil palm in Karnataka and Andhra Pradesh.
(The Economics Times 9 May 1988, 3)

PERSONALIA

Nil

RAW MATERIALS

Nil.

STORAGE

173 Keeping fruit tresh

American scientists have discovered that a substance found in insect, crab and lobster sheels can help to keep fruit fresh for up to nine months.

A chemist from the Acadia University in Wolfville, Nova Scotia, has produced a water-soluble derivative the polymer chitin, which he is using as a spray known as Nutri-Save.

The spray forms a semipermeable coating on fruit which allows just the right amount of oxygen pass through to keep the fruit fresh. The coating effectively puts the fruit to sleep by slowing down its respiratory process. In cold storage the fruit will keep far longer than normal, since each individual fruit is wrapped in its own environment.
(The Hindu 17 August 1988, 19)

174 Keeping Bananas Fresher

Every Banana producer or exporter is always eager to use techniques available for keeping his produce fresh for a longer period. The Botany Deptt. of University of Malaya (UM) has encountered positive results in a project undertaken with the assistance of the Australian International Research Centre, for delaying the ripening of 'Pisang emas' a variety of banana by 15 weeks.

The new technique is different from the current popular method of wrapping the banana in polythene bag which is effective for about 11 days. Under the new technique, unripe 'Pisang emas, were treated with 'Bynonml' an anti-fungal chemical not dangerous to health and wrapped in air-tight plastic bags. The Bananas would keep well in a 15°C temperature and would ripen normally within a few days once unwrapped.

This method would reduce the rate of fungal growth and ripening besides upgrading the quality of the fruit. This would help exporting bananas by sea instead of air. The new find has to be tried out by producing countries like Jamaica.

For details contact: Prof. Datuk A Nawawi, Botany Dept. University of Malaya (UM), Lembah Pantai, Kuala Lumpur.
(Indian Food Packer 42(2), 1988, 115)

175 Tomatoes with longer shelf life

Table tomatoes which will remain in top condition for as long as four weeks after their harvest are being developed here by a team of scientists at the Hebrew University's Faculty of Agriculture. The new varieties may also prove valuable in tropical developing countries as well.

For several years Prof. Kedar and his Hebrew University associates have been breeding tomatoes for disease resistance and high yields. As part of their efforts, they also aimed at the development of varieties with an extended shelf life. To that end, tomatoes from different parts of the world were bred in hundred of combinations, from which ten were chosen as the most suitable. Several of the varieties finally developed combine good colour, flavour, disease resistance and high yields with firmness for at least a week after they turn red; the types earlier grown here had to be consumed within a few days after harvest.

Now the team, in co-operation with Dr.Yossi Misrachi, of Ben Gurion University, has begun to use genetic mutants of plants some of which take several months to produce ripe tomatoes. Crossing them with established Israel varieties already has produced tasty fruit with very bright red colour and an exceptionally long shelf life. Further efforts will now be required to turn the most promising of those developments into commercial crops.

(Beverage and Food World Annual 15(1),1988, 92)

176 Grain storage damage in China

China has the lowest proportion of grain damaged during storage, a survey by the Food and Agriculture Organisation (FAO) has shown. Over the past few years, about 85 per cent of the State-owned barns in China have been cleared of harmful insects, rats, birds, mildew and rot. As a result, the proportion of grain damaged during storage in China has been cut to less than 0.5 per cent, the lowest in the world, according to Mr. Lin Changrui, an official of the Bureau of Science and Technology under the Ministry of Commerce. The world average for grain damage during storage is between six and ten per cent, according to FAO, which surveyed more than 50 countries.

Even in developed countries like the US and Japan, the proportion of grain damage is still as high as about five per cent. In fact, to introduce Chinese grain storage technology to other countries, FAO has been conducting training courses for the past few years.

China has a grain storage institute in Sichuan Province. In addition, research organisations devoted to grain storage, which are spread all over the country, employ more than 2,000 researchers.

Since 1978, China's grain processing industry has incorporated and indigenised advanced technologies from abroad.
(*Financial Express 14 August 1988, 3*)

FOOD ADDITIVES

177 Lecithinated cocoa powder

Cocaofabrick De Zaan, Holland, has recently published information on lecithinated cocoa powders. Cacao De Zaan has succeeded in adding lecithin to some of their cocoa powders, as a result of which these so-called sal-powders are perfectly wettable and suspensible.

Using these sal-powders the instant dairy product manufacture do not have the problems of other ingredients such as sugar becoming lecithinated during agglomeration. The flavour of the finished product is not adversely affected by a surplus of lecithin.
(*Indian Cocoa,Arecanut and Spices Journal 11(1), 1987, 17*)

PROCESSES

178 Carbonated milk

Researchers at ARS' Southern Regional Research Centre in New Orleans were looking for new ways to use surplus powdered milk when they came up with what could be called soda milk.

Actually, they've made two types of this carbonated brew--one with artificial strawberry flavouring and the other mixed with filtered apricot juice, according to food technologist Ranjit S. Kadan.

Soda milk is made by bubbling carbon dioxide gas through a mixture of water, powdered nonfat dry milk, flavouring or apricot juice, and other ingredients. The mixture is kept under pressure and bottled right away so the carbonation doesn't escape.

"It's only a crude laboratory mixture, but it tastes great', Kadan says. "You get that tingling, refreshing sensation of carbonation that you get in soft drinks, and you're also getting calcium, protein, and Vitamin C from the milk and juice".

In tests last year, Kadan says, the strawberry-flavoured milk stayed fresh upto 6 months under refrigeration; the juice mixture lasted 2 to 3 months.

"We've shown that you can make a carbonated drink in which the powdered milk stays suspended and does'nt separate in the mixture", Kadan says. "Commercial companies would have to refine the process and add other flavors before you'll find it in the supermarket".

Kadan used strawberry flavouring he bought in a local supermarket. The apricot juice was filtered using processing methods adapted by Charles C. Huxsoll and colleagues at the ARS Western Regional Research Centre in Albany, California,

Kadan and USDA-ARS have received a patent on the custard, and, he says, if it's developed commercially it probably would be sold as powder in packets like instant oatmeal. It would be prepared by adding hot water, stirring, and cooling for about an hour or processors could mix it and sell it in containers, as yogurt is sold.

(P.T.I. Science Service 7(14), 1988, 19-20)

179 Sunflower protein for the Food Industry

A Research team at the Commonwealth Scientific and Industrial Research Organization (CSIRO)'s Division of Food Research in Melbourne has developed and patented a continuous process for extracting protein from sunflower meal. The process could be utilised by the food industry to yield colourless protein powder for use in nutritious new product lines.

The CSIRO division has designed a continuous pilot plant that uses counter-current extraction through a number of vats. It can process 80 kg of defatted sunflower-seed meal per hour. The method also involves ultrafiltration to concentrate the protein extract and spray-drying to produce a colourless protein powder.

Scientists at the Division have prepared a number of food products incorporating the protein extract. These include mayonnaise, biscuits and cakes. For some food products, the sunflower protein could replace imported soybean protein.

This scenario has several benefits - a more balanced and productive use (for humans) of the 80,000 and odd tonnes of sunflower meal left over each year after extraction of oil from sunflower seeds for the vegetable oil market. This meal currently ends up as cheap stock-feed.

A key factor in the commercial potential of the extract is that it is isolated free of colour. The nutritive value of the protein is being evaluated.

(Asia-Pacific Tech. Monitor March-April 1988, 3)

180 New process to make alcohol

Scientists at the Regional Research Laboratory, Trivandrum, have developed a new method for continuously producing ethyl alcohol or ethanol from Cassava plant starch using immobilised yeast cells. They have successfully operated a 10-litre capacity Fermentation Bioreactor for three months, producing ethanol to prove the low cost of the technology. Based on this, a 60-litre bioreactor is to be set up by RRL in collaboration with the Vikram Sarabhai Space Centre under a Rs 8 lakh project approved by the Department of non-Conventional Energy Sources.

Cassava is one of the most efficient photosynthesising plants, having a carbohydrate content of 90 per cent. The new process developed by RRL involves converting the plant starch into glucose, which are treated with yeast cells to produce ethanol. This process is also economically feasible as it showed that 100 kg of Cassava flour yielded 44.2 litres of alcohol. However, this involves additional cost to cover initial saccharification of starch unlike in molasses.

(*Chemical Products Finder* 7(4) 1988, 156)

PROCESSED PRODUCTS

181 Spicy coffee

Some firms at Melbourne produce flavoured instant coffee mixes. Flavoured coffee is pre-blended food product comprising instant coffee, spices, milk solids, sugar and flavourings, to which only boiling water has to be added.

Some companies in Australia produce Spicy Fruit Muffins which are suited for use with grape fruit and cottage cheese. A few companies make some sauce called as 'Mornay', a rich, slightly spicy cheese sauce made in the traditional way from fresh ingredients incorporating fish stock and 'Mediterranean', a spic Mediterranean sauce with a touch of garlic.

(*Indian Food Packer* 42(2), 1988, 146)

EQUIPMENT AND MACHINERY

182 Food filling machine

Fully and semi-automatic food-filling machines able to dispense almost any food products have been developed by Tri-tech Systems. The units can be strippe without the use of tools for thorough cleaning comparatively faster, it is claime and offer "fill-accuracy" in the order of ± 0.25%. Made in 316-grade stainless steel, the unit is installed with existing packaging systems including thermoform pipelines and form seal machines or as a tabletop depositor, stand-alone, semi-automatic dispenser or fully automatic conveyorised filling machine. Various models in single and multihead are available to handle fill sizes from 10 to 2,500 ml. Units can be supplied with interchangeable dispensable cylinder assemb for extending the dispensing capacity. Clean filling or depositing is assured by a range of purpose-designed nozzles and shear blades. Tri-tech offer a turnkey approach to liquid and semi-liquid filling problems, from project evaluation, through design, supply installation and test to full after-sales care

For more details write to: Tri-tech Systems Ltd., Unit 9, Cliffe Industrial Estate, South Street, Lewes, East Sussex BN8 6JL, U.K.

(*Chemical Products Finder* 7(1), 1988, 37)

183 Rotary powder filling machines

Autopack England offers semi-automatic and automatic rotary powder filling machines having filling speeds of 25 to 100 fills/minute. These machines can handle powder products like milk powder, fruit salts, spices, talcum powder and other free flowing and non-free flowing powder products. The company also offers semi-automatic and automatic liquid filling lines with capacities ranging from 100 cc to 200 litres. Also available are multi-head selective weigher for frozen foods, vegetables, confectionery, dry foods, snacks, nuts, biscuits, etc. The products are filled by weight with the help of microprocessor based control systems.Linear weighing machines with vibratory sealers are also offered.

For further information write to: Panpack Marketing,Panchal House, Station Road, PB No 48, Anand,Gujarat 388001

(*Industrial Products Finder*, 16(9), 1988, 219)

184 Filling/plugging and capping system

Vista Technical Consultants offers a monobloc machine performing a series of operation like filling, plugging, plug sealing and capping from CE King of UK. This compact, easy to use and maintain machine finds applications in food, and chemical industries where the packaging involves a rigid container filled with powder, paste, lotion, syrups; a plastic, metal or rubber plug and/or an outer cap. The machine accepts containers on a conveyor and plugs and caps in orienting and feeding bowls. The machine handles the container and presents it to various workheads to carry out filling, plug inserting, sealing and capping operation. The containers could be a glass bottle/vial, a plastic blow moulded container or a metal can. The container can have round, oval, square, rectangular or any other shape. The machine handles all types of plugs such as rubber stoppers, nozzles, and droppers. It is capable of handling ROPP caps, screw caps, alu caps, push-on caps and pilfer proof caps. There are two models of this machine giving outputs upto 70 and 140 containers per minute. Being ruggedly built and competitively priced, these machines are ideal for Indian conditions. Vista Technical Consultants is organised to provide installation, commissioning and after sales service of these machines.

For more details write to: Vista Technical Services Pvt Ltd., C/o Mather and Platt(1) Ltd, 5/5A, PN Kothari Estate, 200 LBS Marg, Bhandup (West), Bombay 400 078.

(Chemical Products Finder 7(1), 1988, 76)

185 Electronic oil filling machine

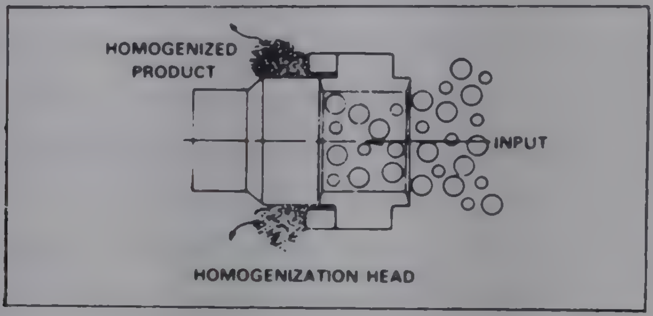
The electronic oil filling machine from Sidhant Enterprises is a compact unit approximately of the size 600 x 450 x 300 mm. It is a complete machine with its own pump, measuring arrangement and solenoid valve. Any quantity of oil which needs to be filled can be adjusted with the thumbwheel switches mounted in front. These setting switches are installed in a lockable pocket. With the help of a pushbutton, the preset quantity of oil is filled. The quantity being poured is displayed through 100-mm wide digits. Totaliser with digital display is optional. On completion of the preset quantity, pump is automatically switched off and solenoid valve is closed. At this time, a signal is also given to the operator about the end of pouring cycle. The machine is available in different models for liquids of different viscosity. Other features include in-built voltage stabiliser and battery back up. The machine is easy to install and use: just connect the inlet to the overhead tank supply and connect the unit to power source, now it is ready for use.

The machine can also be designed to meet specific requirements.

For further information write to: Sidhant Enterprises, B-456-457, First Floor, Nehru Ground, Faridabad, Haryana 121 001.
(Industrial Products Finder 16(10), 1988, 157)

186 High Pressure homogeniser

Goma Engineering has introduced high pressure homogenisers with pressures up to 700 kg/cm^2 and capacities up to 6,000 LPH. The homogeniser is basically a triplex plunger pump, horizontally mounted, with a built-in homogenisation device. The process liquid is subjected to high pressure, which is relieved over a one or two stage homogenisation device of special configuration. The resulting abrupt pressure drop creates high shearing and cavitation forces which reduce the particle size of drop-lets and solids. One or two stage homogenisation heads with hydraulic pressure setting by means of manual control valves are offered. This ensures ease and exactness of operation and maximum safeguarding against excessive pressure. Applications include, homogenisation of emulsions and suspensions in chemical, food and beverage, dairy, oil emulsion, fruit juice, ketchup, baby food, milk, proteins, etc.



For more details write to: Goma Engineering Pvt Ltd. 9-B, Ketyco Indl. Estate, Majiwade, Thane, Maharashtra 400 601.
(Chemical Products Finder 7, June 1988, 163)

187 High output cooker-extruder

A high-output cooker-extruder, which can be easily adapted to process a great variety of food products, is claimed to offer attractive speed and operating cost advantages over conventional cooking process.

The Twin-Screw Cooker-Extruder can provide a continuous output capacity of 200 to 500 kg/h. The design allows precise control of moisture content leading to substantial savings on energy, and far less human supervision is required than with batch cooking techniques. The two intermeshing steel screws are assembled from a selection of modular components in order to optimise the compression, shearing and mixing characteristics for any particular end product. The barrel casing in which the screws rotate is assembled in sections, so that wear-prone parts can be replaced easily. The ccoker extruders offer attractive advantages in processing cereal and bakery products, and that they are being used increasingly by manufacturers of confectionery, snack and animal-food products.

For details contact : Sale Tilney Technology PLC, Weybridge, Surrey KT 15 2RH U.K.
(Indian Food Packer 42(2), 1988, 135)

188 Agitators/mixers

Gladwyn Engineering Co. offers a range of agitators for all types of mixing applications like mixing, gas absorption, homogenisation, blending and dispersion for the chemical, food processing, vegetable oil, and various other industries. The range of agitators include side fixing portable type agitators with propellers, vertical dispersion type dispersators, vertical turbine type with discs, axial flow or curved blades. Sizes range from 1 HP to 300 HP. Material of construction of the agitators is carbon steel, stainless steel and other alloys. All Gladwyn agitators are designed using an indigenously developed computer aided design software package. The company offers services for agitator design problems. Also offered are filter presses, spray dryers with high speed atomisers, continuous distillation plants, multiple effect evaporators and steam jet ejectors.

For more details write to: Gladwyn Engineering Co., 26/3 Pushpa Vihar, Opp Colaba Post Office, Bombay 400 005.
(Chemical Products Finder 7, June 1988, 179)

189 SS monobloc centrifugal pump

Pharmalab Group has specially designed an open impeller monobloc centrifugal pump to facilitate smooth and even transfer of various liquids particularly in dairy, food processing, beverage, vegetable oil and other allied industries. Construction from high grade-pressed stainless steel, provided with sanitary fittings and highly finished mechanical sealing system ensures leakproof working. Pumps are also available in different sizes of semi open impellers, easy-to-install, dismantle and clean.

For further details write to: Pharmalab (Group) Marketing Agency, Star Metal Compound, LBS Marg, Vikhroli, Bombay 400 083.
(Chemical Products Finder 7, June 1988, 226)

190 Microwave continuous food drier

Hi-Tec System launched multi magnetron continuous process commercial microwave drier has aroused the interest of many sectors of industry. Successfu trials have been carried out on food products such as wheat, rice, pecans, macadamias, flour and hops. Designed by a research team and developed through State and Commonwealth grants, the drier permits continuous process drying with a high level of control and energy efficiency. The drier has produced resu demonstrating an energy consumption of less than half that of a comparable gas or oil fired drier. The drier's cooking system retains virtually all microwaves within the system, and an unimpeded conveyor moves product in, and then out, of the drying chamber whereas traditional chamber design has allowed for one magnetron per chamber. The Chamber configuration in Hi-Tec System's drier enables magnetrons to be fired side by side and opposite each other, with 16 magnetrons in each chamber.

For details write to: Mr. Keith Thornton, 4, Morona Avenue, Wahroonga, NSW 2076, Australia.

(Indian Food Packer 42(2), 1988, 146)

191 Chillie-punching machine

Scientists at the Agricultural Engineering Division (AED), Indian Agriculture Research Institue, New Delhi, have developed a chillie-punching machine which helps dry chillies faster.

The machine essentially consists of two square trays, fitted over one another, in a box. The upper tray is fitted with a large number of needles, whose sharp ends point towards the lower tray placed two to three inches below.

The chillies are placed in the lower tray. A lever fitted at the side of the upper tray, when turned, pushes the needles down on the chillies which thus get 'punched'.

The machine can punch and prick as many as 15 kg of chillies per hour.

The pricked and punched chillies dry much faster than unpunched ones, sometimes taking as little as 40 per cent of the time taken by unpricked ones. The machine can also punch fruits like "amla" and "ber".

(PTI Science Service 7(11), 1988, 1-2)

192 Pulse dehulling and splitting machine

Scientists at the Agricultural Engineering Division of the Indian Agricultural Research Institute in New Delhi have developed a low-cost pulse-milling machine which can dehull and split. The dehulling portion of the machine comprises a steel cylinder with a rough surface, and a concave steel plate below the cylinder. The dehulling set is provided with a feed hopper above and blower below. All parts are mounted on an angled iron frame. The cylinder is 225 mm long and has a diameter of 150 mm. Its outer surface is covered with a mesh. A concave plate having the same radius of curvature, and fitted along its length with 1x1 mm grooves, 25 mm apart, is provided below the cylinder.

The cleaned and graded raw material is fed into the feed hopper mounted on top of the cylinder. Due to gravitational force the material flows from the hopper into the dehulling set at a rate which can be controlled with the help of regulator fitted at the bottom of the feed hopper.

The husk is removed as the grains are rubbed between the moving rough surface of the cylinder and the stationary rough surface of the concave plate. The mixture of the husked and unhusked split and whole pulses fall from the outlet at the bottom of the machine. As it falls, it is subjected to an air blast from a blower, which removes the husk and other light materials like dust. The cleaned pulses are collected at the main outlet

During trials, the machine recorded 94 per cent efficiency and a capacity to dehull 128 kg. to 140 kg. of pulses per hour. Its electricity consumption is 2.15 Watts per hour, depending on the quality of the raw materials such as purity, moisture content and uniformity of size.

The machine, which does not cost more than Rs.3,000, can be operated by a single person, using a one-horsepower, three-phase electric motor .

(*Financial Express* 14 August 1988, 6)

193 Milktesting centrifuges

An Indian manufacturer of milktesting appliances and other dairy machinery offers hand-driven and electric-powered milktesting centrifuges.

Hand-driven centrifuges are claimed to be of solid construction, strong and sturdy and perfectly alligned, and to run smoothly. They have ball-bearings and speed indicators. Models for 4, 8, 12 and 24 tests cost USD 26, USD 27, USD 28 and USD 29 respectively.

The specifications for the electric-powered ones include: 50 Hz, single phase 220/230 V with switch and 0.25 Hp motor. Without timers, the 8, 12 and 24 tests centrifuges cost USD 96, USD 98 and USD 100 and with timers, USD 125, USD 126 and USD 128.

(*Economic and Commercial News* 18(29), 1988, 13)

194 Bread moulding and baking oven

An Indian manufacturer of food-processing equipment offers a bread moulding machine and bakery oven. The machines are manufactured by Gardners Corporation. The specifications of the bread moulding machines are: Four roller types with a capacity of 500 to 700 loaves an hour, each weighing 400 g, and a motor.

The baking oven is electrically heated and double-walled with full insulation. The machine is also fitted with a thermometric temperature control switch and can produce 150 loaves each weighing 400 g, in 30 min.

The company has already exported its wares to Bangladesh, Burma, Mauritius, Nepal, and some African countries.
(Economic and Commercial News 18(27), 1988, 14)

195 Vanquish bottle washer

Four milk bottle cleaning machines, specially designed for small dairies, have been introduced by West Yorkshire based Newsmith Stainless Ltd.

The single-end soaker hydros of various capacities, are capable of washing and rinsing between 3600 and 7200 bottles an hour. The machines operated by one person are hygienic and durable because of their stainless steel construction and they are compact. Each model occupies an area of less than 5 sq m, an important benefit where floor space is restricted.

Fully automatic loading is available as an optional extra, although the semi automatic bottle infeed fitted to standard versions of machine will suit most dairies.

To reduce the possibility of breakages, bottles are removed from the machine by continuously rotating cams which lower them gently on to the discharge conveyor.

Variations in throughput can be obtained by merely turning a manual control to regulate the thyristor-controlled DC motor that drives the chain conveyor.

All filters, steam and water connections, drains and overflows are grouped together to simplify installation and servicing. Running lights monitor the washing sequence and, if any stoppages occur, fault lights will identify their location.
(Food Trade Review 57(6), 1987, 284)

196 Portable brewing machine for iced tea

Designed for cafeterias, restaurants, and hotels, the Fresh Brewed Iced Tea Machine brews, cools, and dispenses tea made from tea leaves in a flow-through filter pack.

For further information write to: Cecilware Corporation, 43-05, 20th Avenue, Long Island City, New York 11105, U.S.A.
(*Industrial Products Finder* 16(9), 1988, 158)

197 Flotation clarifier

The Dewan flotation clarifier works simultaneously by flotation and sedimentation. Most fluids can be clarified within four minutes. The design is shallow, open and self-cleaning. Dependable controls are provided for the unit to work 24 hours around the year. Because of small size it can be located inside plant building. It is also very good for recovery of oil, primary clarification and as thickener in dairies, vanaspati mills, chemical industry, food processing, textile mills, etc. A unit to handle 60 m^3/hour is less than 3 metres in diameter and 1 metre in height.

For more details write to: Dewan Kraft Systems Pvt Ltd.,N-127, Greater Kailash-1, New Delhi 110 048
(*Chemical Products Finder* 7(1), 1988, 14)

198 Year-round coconut drying

A wood-fired cabinet drying system is helping a small women's co-operative in Bangladesh to produce dessicated coconut even in the wet season, when raw material prices are at their lowest and supplies most plentiful. In the past, the women were not able to work at all during the monsoon months of June to September because their solar driers were inoperative.

The coconut project is directed by the Menonite Central Committee (MCC). ITDG brought MCC's food technologist, Karl Bergen, to England for a two-week visit to learn about the construction and use of the cabinet drier. He then returned to Bangladesh and built one according to a modified design more suitable to local conditions. A second drier is planned for another MCC project.

Each of the 50 women has two solar driers, supplied to them through MCC, and the drying time is between five and six hours depending on the time of year.

In the rainy season, when the solar driers cannot be used, the newly installed cabinet drier carries out this final process. The lower coconut prices during the rainy season will ensure that production is still profitable, despite the extra cost of fuel.

Each woman earns on average 600 taka (£ 12) per month.
(*Appropriate Technology* 14(4), 1988)

199 Rotary grain cleaner

A rotary grain cleaner, which cleans and grades cereals, pulses and oilse has been developed by the Agricultural Engineering Division (AED) of the India Agriculture Research Institute, New Delhi.

The machine consists of two screens in the form of concentric cylinders, c inside the other, a blower, a feed hopper and a drive unit, all mounted on an i frame. The slope of the iron frame can be suitably altered to change the slope the screens.

Perforations of the inner screen are bigger than those of the outer screen Both the screens rotate at the same speed and in the same direction. The machi which is operated by a one-horsepower, single-phase electric motor, removes the desirable material from the desirable material on the basis of size and weight.

The material is fed axially inside the inner screen which retains larger-sized substances like stones. The material then passes into the outer screen w retains the grains, removes grain impurities, and allows the fine materials to through. The grains retained on the outer screen come out through a discharge A fan-driven by a motor removes the lighter impurities like dust and chaff.

The machine consumes 1.25 kilowatt/hour of electricity per tonne of clean grains. During trials it cleaned 200 kg of wheat per hour, recording 95 per ce efficiency, according to Mr Amar Singh, an AED scientist.

The advantages of the rotary grain cleaner, over the earlier ones include high efficiency and output capacity, low power consumption, low maintenance cost and smooth operation.

(*PTI Science Service* 7(13), 1988, 4)

200 Powder dozing machine

Autopack manufactures semi-automatic powder dozing machine for accurate fil of powder and granules in containers, bottles, pouches,etc, with an accuracy up 1%. Filling capacity ranges from 5 g to 1 kg and output up to 30 fills/min. Th machine has an electronic counter for accurate fill and easy adjustment of weigh Special stirring system ensures good de-aeration. Power requirement is 0.75 kW. Fully automatic models with inline coding, cap fixing, etc. are also available.

The machine is suitable for filling dry syrups, coffee, food products in powder form, and pharmaceutical products.

For further details write to: Autopack Machines Pvt Ltd, 101-C Poonam Chambers 1st floor, Dr.Annie Besant Road, Worli, Bombay 400 018.
(Chemical Products Finder 7(1), 1988, 9)

201 Automatic chilling plants

Airconditioning Specialities manufactures automatic water and brine chilling plants operated by Freon 12 and Freon 22. The capacity range of water chilling plants is 1 to 400 TR. The brine plants are available in the capacity range of 1 to 50 TR and temperature up to -55°C. Chilling plants are available upto -70°C Care has been taken to ensure that compressors and controls do not have any monopoly features. The condensers and chillers are carefully sized to match the desired flow rates and temperatures. Shell and tube condensers have copper tubes. integrally finned. Direct expansion chillers are shell and tube type having plain copper tubes. All the tubes are pressure tested at 21 kg/cm^2 and are field replaceable. The refrigerant circuit incorporates controls like liquid valve, strainer, charging valve, thermovalve and a pilot solenoid. These automatic plant are ideal for industries like chemical, food, oil and salt. The company can design and supply matching components like cooling towers, pumps, process tanks and electrical control cubicles for complete automatic operation. These plants incorporate safety controls against fluctuations in fluid pressure. The company offers services to survey and update old plants of any make.

For further information write to: Airconditioning Specialities, 40 GIDC Estate, Makarpura, Vadodara, Gujarat 390 010.
(Industrial Products Finder 16(10), 1988, 213)

202 Pressure washer cleaners

Jetwell Ltd. U.K., manufactures a unique range of products that operate as pressure washer cleaners for the cleaning, food processing, agricultural and general industries. They cost a fraction of the price of alternative equipment on the market, are light and compact, safe and simple to use, and require no regular service or maintenance.

For further information write to: Jetwell Ltd, 28, Molesworth Street, Wadebridge PL277DN, Curnwall, U.K.
(Industrial Products Finder 16(10), 1988, 23)

203 Safety matting for the food industries

A safety matting purpose designed for use by the food beverage and other hygiene conscious industries, is available from a British company. The Britannia range of matting is constructed of low toxicity PVC which conforms to the food industry regulations. It consists of red and white extrusions 13 mm high and 6 mm wide, interwoven to form a lattice. The extrusions are cross ribbed to provide extra grip in wet or greasy conditions. The matting is self draining, fully reversible, adaptable and almost indestructible. It is resistant to fire and most chemicals, is easily cleaned and has a full recovery from point loading. Two grades are avilable B2222F single-ply for normal use and B2210F double-ply for heavy duty applications.

For further information write to: Coba International Ltd, New Road, Kibworth Beauchamp,Leicestershire LE8OLE, U.K.
(Industrial Products Finder 16(10), 1988, 16)

PACKAGING

204 Packaging machinery for food industry

Wrapking Systems Ltd, UK,manufactures a wide range of packaging machinery for the food industry: horizontal form, fill and seal; vertical form, fill and seal; sachet machines, and stretch-wrapping machines. This range of equipment will be supported with weighers, augers, check-weighing, metal detection and shrink wrapping equipment. In the short term the company is looking for agents, but its long-term view is to look for a partner to manufacture, market, sell and service its machinery in India.

For further information write to: Wrapking System Ltd, Kargo House, Silverdale Road, Hayes, Middlesex UB3 3BN, U.K.
(Chemical Products Finder 7, June 1988, 249)

205 Easy availability of food grade plastics

A series of measures are soon be taken to ensure easy availability of food grade plastics meant for packaging of processed foods.

These steps are being taken, official sources say, as part of the strategy to promote development of the processed foods industry. It has been identified as a major thrust area for exports in the next few years. Packaging of processed foods in internationally accepted modes has therefore assumed significance.

The processed measures include reduction in import duties of polyester chips bottle grade as well as on equipment needed to manufacture containers made of such plastics. Incentives will also be given for

Currently, it is pointed out, a large number of processed foods are being packaged in unsuitable plastics. For instance recycled PVC (poly vinyl chloride) is being used for many processed foods even though this reduces the shelf life of such products.

Processed food manufacturers are reluctant to opt for bottles made of polyethylene terephthalate (PET) or what is known as polyester chips bottle grade because of high prices of this raw material. With the steps now proposed to be taken, the government expects that PET prices will fall, thereby making use of PET bottles and containers economically viable.

Apart from high prices, another problem being faced is inadequate availability of PET by bottle-making units. At present there is only one indigenous manufacturer of PET with an installed capacity to 1,200 tonnes per annum. The existing demand is about 2,000 tonnes per annum for bottle manufacturers and this is expected to rise to 3,200 tonnes per annum by 1988-89.

Although imports are being allowed to meet the balance requirements of industry, duty has been pegged at 245 per cent ad valorem. This would ensure that the landed cost of these chips is brought in line with that of other thermoplastic raw materials used for packaging purposes.

(*The Economic Times* 22 August 1988, 6)

206 Plastics processing courses

The oil industry development board will provide Rs. 11 crores for the development of training courses in plastics processing in the industrial training institutes (ITI's) during the next years. The courses to be opened in 17 ITI's, will become operational from this year, according to an official release. These programmes will run in Gujarat, Maharashtra, Uttar Pradesh, Andhra Pradesh, West Bengal, Assam, Orissa, Punjab, Madhya Pradesh, Tamil Nadu, Karnataka and Haryana and in areas where plastic processing industries predominate.

(*The Economic Times* 26 August 1988, 6)

ANALYSIS

Nil.

COMMERCIAL INTELLIGENCE

PRODUCTION (RAW MATERIALS)

207 The Production of coconut in different states and its share to the all India during 1983-84 is as under:

State	Production (Million nuts)	% to total
Andhra Pradesh	192.4	3.3
Kerala	2,694.7	45.9
Karnataka	966.5	16.5
Orissa	97.9	1.7
Tamil Nadu	1,402.2	23.9
West Bengal	167.7	2.9
Goa, Daman & Diu	106.0	1.8
Others	243.6	4.0
All India	5,871.0	100.0

(Oils and Oilseeds Journal 38(7-12), 1986, 28)

208 State-wise production of onion and potato

(Production in '000 tonnes)

ONION

State	1985-86	1986-87
Andhra Pradesh	163.9	147.0
Bihar	119.4	126.8
Gujarat	477.7	477.7
Haryana	43.3	43.3
Karnataka	196.1	183.6
Madhya Pradesh	135.8	151.3
Maharashtra	643.0	600.2
Orissa	382.1	382.1
Punjab	27.6	27.6
Rajasthan	46.8	57.0
Tamil Nadu	198.9	158.2
Uttar Pradesh	410.5	349.1
Others	17.6	15.7
All-India	2862.7	2719.6

POTATO

State	1985-86	1986-87
Assam	308.8	337.7
Bihar	1312.3	1334.5
Gujarat	153.1	253.6
Haryana	143.1	131.5
Himachal Pradesh	49.3	37.8
Karnataka	244.1	222.7
Madhya Pradesh	271.7	333.7
Maharashtra	59.7	51.9
Orissa	341.1	96.7
Punjab	427.3	251.5
Tamil Nadu	133.4	98.6
Uttar Pradesh	3940.2	5757.9
West Bengal	2757.6	3542.6
Others	281.1	280.7
All-India	10422.8	12731.4

(Nafed Marketing Review 18(5-6), 1988, 22)

209 Milk production

The country produced 46.1 million tonnes of milk in 1987-88, exceeding the target of 45.9 million tonnes, according to the Annual Report of the Department of Agriculture and Co-operation.

The co-operative dairy movement received further impetus during the year under Operation Flood III. As on October 1, 1987, there were 51,550 dairy co-operative societies with a total membership of 53.6 lakh people and a total processing capacity of 126.12 lakh litres per day.

The Rs 681 crore outlay of Operation Flood is likely to further increase with the proposed World Bank credit of 360 million dollars and the EEC aid in the form of 75,000 tonnes of skim milk powder and 25,000 tonnes of butter oil.

A new Aseptic Packaging Station was commissioned in Baroda. This, along with the existing ones at Surat, Indore, Jaipur and Guntur, markets ultra heat-treated milk in 33 towns

(*Pashudhan* 3(6), 1988, 2)

210 Production and export of tea from India

(Million kg)

Year	Production	Exports
1985	656	214
1986	624	201.60
1987	670	210

(*NAFED Marketing Review* 18(3-4), 1988, 25)

PRODUCTION (INDUSTRIAL)

211 Oil production during 1985-86

(in lakh tonnes)

Oilseed	Expeller Oil	Solvent Oil
Groundnut	11.00	0.50
Mustard/Rapeseed	12.25	0.25
Sesamum	1.80	Negligible
Linseed	1.60	"
Castor	1.60	"
Sunflower	1.50	0.50
Safflower	0.74	0.15
Nigerseed	0.30	Negligible
Soyabean	-	2.00
Cottonseed	2.50	0.25
Other new oils	0.50	0.10
Tree origin	0.50	0.50
Rice bran	-	2.50
Coi	2.40	0.10
	36.70	6.85

Oilseeds Journal 38(7-12), 1986, 14)

212 Ricebran production (quantity in tonnes)

Year	Edible	Total
1983-84	23,000	1,83,000
1984-85	19,200	2,02,000
1985-86	30,000	2,50,000

(*Oils and oilseeds Journal* 38(7-12), 1986, 28)

213 Production and utilisation of molasses - 1986-87

(lakh tonnes)

State	Actual production	Total availability*	For distillation	Utilisation for other uses**	Total	Distillation as % of total utilisation
Andhra Pradesh	3.03	3.35	2.55	0.24	2.79	91.4
Bihar	1.30	1.84	1.08	0.03	1.11	97.3
Gujarat	2.33	2.59	1.34	0.93	2.27	59.0
Haryana	1.14	1.14	0.85	0.26	1.11	76.6
Karnataka	2.60	3.07	2.26	0.35	2.61	86.6
Maharashtra	8.51	9.64	6.74	1.03	7.77	86.7
Punjab	1.13	1.34	0.69	0.24	0.93	74.2
Tamil Nadu	3.73	3.78	2.96	0.50	3.46	85.5
Uttar Pradesh	13.24	14.16	7.80	1.48	9.28	84.1
Other states/ regions	0.71	1.67	0.92	0.31	1.23	74.8
Total	37.72	42.58	27.19	5.37	32.56	83.5

NOTE: * include carry-over stocks and receipt from other states

** includes for cattlefeed, lifting by other states and other uses.

(*The Economic Times* 16 June 1988, 11)

214 Production and consumption of alcohol, 1987-88

(lakh litres)

State	Estimated production	Estimated availability*	Demand for Potable purpose	Demand for Industrial purpose	Total**	Availability as % of total	Potab as % total deman
Andhra Pradesh	713.00	769.09	526.00	250.00	786.00	97.8	66.
Bihar	280.00	290.97	115.00	80.00	205.00	141.9	56.
Gujarat	310.00	349.45	-	575.24	575.24	60.7	-
Haryana	157.50	175.10	140.00	10.00	160.00	109.4	87.
Karnataka	510.40	544.10	400.00	250.00	660.00	82.4	60.
Maharashtra	1700.00	2012.03	560.00	981.32	1611.32	124.9	34.
Punjab	291.28	305.49	203.37	120.50	373.87	81.7	54.
Tamil Nadu	660.00	735.00	180.00	385.00	575.00	127.8	31.
Uttar Pradesh	2443.20	2782.20	750.00	932.00	1782.00	156.1	42.
Other states/ regions	894.84	130.79	1050.81	235.74	1341.36	9.8	78.
Total	7960.22	8094.22	3925.18	3819.80	8069.79	100.3	48.

NOTE: * including carry over from the previous year

** including for other purposes.

(*The Economic Times* 16 June 1988, II)

215 Installed capacity of iodised salt as on December 1987

State	Units (No.)	Installed capacity (000 tonnes)
Gujarat	124	1798
Rajasthan	101	1138
Tamil Nadu	13	172
Other States	27	596
Total	265	3704

(*NFI Bulletin* 9(3), 1988, 7)

216 Capacity utilisation in alcohol-based industries

(Per cent)

Product	1984	1985	1986
Acetic acid	56.0	53.0	51.5
Acetic anhydride	74.5	51.1	57.8
Butyl acetate	51.7	34.9	26.3
Monochloro acetic acid	49.9	85.9	73.6
Styrene	60.7	N.A.	N.A.
Polythylene	65.3	82.0	78.7
Butanol	54.6	24.6	23.2
Butadiene	26.3	13.4	N.A.
P.V.C.	67.8	74.5	74.5

(*The Economic Times 16 June 1988, II*)

EXPORT

217 New duty drawback rates announced

The Union Government has announced an improved duty drawback rate schedule, which covers many export items of food processing. The new rates came into effect from June 1, 1988.

Items for which the rates have been enhanced by nearly 10 per cent include products of food processing, engineering goods like galvanised pipes, tubes and boilers.

(*Industrial Products Finder 16(10),1988, 75*)

218 New blanket exchange scheme

The Reserve Bank of India has announced a new blanket exchange permit scheme under which exporters of 25 specific items will be allowed a foreign exchange release of up to a maximum of 10 per cent of the annual export earnings. Exporters of the following 25 products are eligible under the scheme. Tea bags, packet tea and instant tea, processed foods (meat and marine products, spices in consumer packs), value-added coffee, processed fruits, chemicals and pharmaceuticals, plastics and linoleum products, other processed foods, shrimps, and consultancy services.

(*Chemical Products Finder, 7, June 1988, 259*)

219 Special card for exporters is offing

The Union Government will shortly issue a special card to exporters. Addressing the "seminar-cum-open house meeting" organised by the State Bank of India (SBI) here, the Federation of Indian Export Organisation's President, Mr. Ramu Deora said, initially the cards would be issued to all trading houses so that their problems with banks and custom authorities would be cleared immediately

With such support from the Government, he hoped that the export houses would be able to achieve an export target of Rs. 10,000 crores until 1990. (*Financial Express* 22 July 1988, 1)

220 Pure milk ghee export allowed

The Union Government has removed the ban on exports of pure milk ghee and allowed it to be exported up to a limited ceiling.

The Government decision to allow export of pure milk ghee up to a limited ceiling has been given effect by a public notice, which shifts pure milk ghee from Appendix - 2 (which carries the list of items banned for exports) to Appendix-4 list 1 (which carries the list of export items with a ceiling). (*Financial Express* 22 July 1988, 5)

221 Processed foods - A thrust area for exports

The Commerce Ministry has identified processed foods as a thrust area for exports. Addressing an official meeting on issues relating to exports of agricultural items from Punjab in Chandigarh on July 15, 1988, the Minister of State for Commerce, Mr.P.R. Dasmunshi, suggested the preparation of an action plan for increasing exports of agricultural items including items of processed foods from Punjab. He said if a workable plan could be drawn up and implemented successfully for Punjab, similar plans could be prepared for other States also.

India, at present, is exporting agricultural items, including tea and coffee, amounting to a total of over Rs. 30,000 million. The Minister called for greater attention to the marketing of items like fruits and vegetables, cut flowers and processed foods. The low presence of Indian items in the external market in this sector had mainly been due to the relatively high unit cost of production, quality problems, transportation difficulties and quality of packaging.

The Indian processed food industry offers a vast potential as it can supply a wide range of quality food products at competitive prices. The exports of processed foods had increased to Rs 2.99 billion in 1986-87 while the export target for 1987-88 is of the order of Rs. four billion.

In fact, the Agricultural and Processed Food Products Exports Development Authority (APEDA), which is the nodal agency for processed foods exports, has been asked to draw up detailed export strategies for all its five export product areas. These areas cover canned and bottled fruits and vegetables including fruit juices, confectionary, walnuts, mushrooms, guar gum, guar meal, etc., fresh and frozen meal and poultry products, fresh fruits and vegetables, particularly mangoes and basmati rice. Export of basmati rice can be stepped up to a level of 800,000 tonnes from the current level of 237,153 tonnes by 1992. The target for export of Basmati rice during the current year has been fixed at Rs. 2.5 billion.
(Economic and Commercial News 18(31), 1988, 8)

222 Groundnut exports register marginal increase

India has been able to sustain the level of exports of groundnut and its extracts during 1987-88 in spite of severe drought in some of the major groundnut producing areas of the country. Even though the volume of exports during the year under review was 289000 tonnes as against 290000 tonnes in the preceding year (1986-87) the value realisation improved to Rs. 707.8 million FOB from Rs. 537.3 million during the previous year, a rise of Rs. 170.5 million or 31.7 per cent.

Poland has emerged as the leading importer of Indian groundnut extractions (FOB Rs. 668.8 million), followed by Czechoslovakia (FOB Rs. 33.3 million), Sri Lanka (FOB Rs. 4.7 million), Kuwait (FOB Rs. 0.4 million), Nepal (FOB Rs. 0.3 million) and Mauritius (FOB Rs. 0.3 million).

To give a fillip to exports, the Government of India has chalked out a new strategy in the new Export-Import Policy for 1988-91. The policy allows export of groundnut extractions on contract with Groundnut Extractions Export Development Association (GEEDA). Under the revised new policy, the Joint Chief Controller of Imports and Exports, Bombay, will allow export by grant of export licences with validity of six months after the connected contract is registered with GEEDA. Initially, a quantity of 1,00,000 tonnes was released for the licensing period 1988-89 which has now been raised to 1,60,000 tonnes.
(Economic and Commercial News 18(29), 1988, 7)

23 Automatic detention reserved for sea food exporters

Five more exporters of frozen shrimp from India have been lately removed from the automatic detention by the Food and Drug Association (FDA) in the US.

The removal of automatic detention followed the export of consecutive salmonella-free consignments by these firms said the Marine Products Export Development Authority (MPEDA) sources here.

With the removal of detention of these five firms, the total number of Indian exporters in the list has risen to 41.

Of the five firms on which the ban was lifted lately, two are based in Cochin, one in Calcutta and two others in Bombay.

However, the sources added that the FDA is re-assessing the policy on handling perishable commodities. It is, therefore, possible that in the near future the FDA's Policy in this regard will be tightened. This is with a view to further reducing the possibility of violative goods entering the US.
(Financial Express 15 July 1988, 10)

224 Record export of marine products in 1987-88

Despite the decline in marine fish landings on the Kerala Coast, the lean season at Visakhapatnam which is the base of operation of most of the country's deep-sea fishing fleet and the sluggish Japanese market for certain counts of Indian shrimp on account of very stiff competition from Taiwan, China and Thailand, export of marine products during the financial year 1987-88 recorded significant growth.

Compared to the year 1986-87, during 1987-88 export of seafood registered an impressive rate of growth of 13.21% in volume and 15.31% in value. Total exports during 1987-88 went upto the all-time high of 97,179 tonnes surpassing the previous record of 92,691 tonnes in 1983-84. From Rs. 460.67 crore in 1986-87, export earnings from seafood reached the level of Rs. 531 crore during 1987-88

Product diversification and export of value-added items and increase in the quantity of shrimp in absolute terms contributed to the overall increase in volume during 1987-88. Export of shrimp, cuttlefish and lobsters increased in quantity. The increase in the case of cuttlefish was over 90% compared to the previous year whereas lobsters registered an increase of over 50%. The rate of growth in the case of shrimp was comparatively less at about 13%. Export of value added items like individually Quick Frozen (IQF) Shrimp also contributed to the increase in value of exports.

Japan continued to be the leading market for our seafoods and accounted for 61% of the total export earnings though it was less than last year's share of 67%. Western Europe emerged as the second largest marked followed by the United States.
(Seafood Export Journal 20(6), 1988, 29, 31)

225 Meat, De-oiled cake exports put on OGL

The Government has made several changes in the export policy with items such as meat and de-oiled cakes, put under Open General Licence (OGL) subject to certain conditions.

Prior to this, items were permitted to be exported against the limited ceiling announced by the Government from time to time.

Other export items added to the OGL are black pepper (extra quality NG-1), coir and its products, and others.

According to a public notice issued by the Chief Controller of Import and Export, the exports of gum karaya has been canalised through the Tribal Cooperative Marketing Development Federation, instead of the National Agricultural Cooperation Marketing Federation (NACMF).

The categories of meat and de-oil cakes whose exports have been allowed under OGL are the following: meat of buffalo, both male and female, including heart, liver, lungs, brain, toungue, kidneys and other organs; meat of Indian sheep including heart, liver, lungs, brain, toungue, kidneys and other organs; de-oiled rice bran (rice bran extraction); de oiled groundnut cake (extraction); solvent extracted cotton seeds cakes (decorticated and undecorticated); and soyabean extraction.

(Economic and Commercial News 18(31), 1988, 7-8)

226 Minimum export price fixed

The government has notified minimum export prices (MEP) for buffalo meat and black pepper, while the MEP for meat of buffalo has been fixed at Rs. 11.50 per kg FOB, it is Rs. 19,000 per tonne FOB for black pepper (asta quality MG-1). According to an Export Control Order issued by the chief controller of imports and exports on July 12, export of meat of sheep and goat will be allowed only on outright sale basis and not on consignment basis.

(The Economic Times 18 July 1988, 3)

227 Sharp rise in exports of spices

Exports of spices rose to an all time record of Rs. 2870 million during 1987-88.

The record achievement of the spices industry was against an export target of Rs. 2600 million.

The notable export earnings from spices were mainly contributed by pepper, chillies and spices and oils. It was earlier estimated that the total export of oils and oleoresins of spices during the year would be to the tune of Rs. 120 million, but according to the estimates of exporters, the actual export of oils and oleoresins during 1987-88 might touch Rs. 180 million.

The trend in spices exports from the country shows a welcome change in pattern so much so that the value added items like consumer packed spices curry powder and oils and oleoresins of spices are picking up on the export front compared to whole spices in bulk

During April-December 1987, India's exports of spices at 52,000 tonnes valued at Rs. 1774.5 million were less by 26.4 per cent in quantity by 4.1 per cent in value terms as compared to 70,700 tonnes valued at Rs. 1850.3 million during April-December 1986. The fall in quantity in this phase is attributed to the drought conditions in the country.

For the year 1987-88 the Spices Trading Corporation Limited had fixed a target of 300 metric tonnes of cardamom (150 metric tonnes for export, and an equal quantity for internal sales), 1000 metric tonnes of black pepper (700 metric tonnes for export, 300 metric tonnes for internal sale) and 100 metric tonnes of other spices to be sold in the internal market.

The total export of spices in 1984-85 was worth Rs. 2066.7 million, and rose to Rs. 2778.1 million 1985-86, registering an upswing of 34.4 per cent. However, the trend could not be sustained, and the figure came down to Rs. 2690.6 million in 1986-87, a decline of 3.1 per cent in value terms.

(Economic and Commercial News 18(30),1988, 7-8)

228 Cardamom prospects bright in Middle East

Cardamom exports in 1985-86 peaked to 3272 tonnes with the total production placed at 4500 tonnes at a total value of Rs. 585 million of which Middle East accounted for 2726 tonnes valued at Rs. 494 million. This represents almost 84 per cent of the total production while the following year witnessed a decline of about 55 per cent to reach 1447 tonnes out of the total production of 3500 tonnes. The production during 1987-88 is estimated at 2,900 tonnes of which less than 1000 tonnes may have been exported.

The projections for 1988-89 envisage the total production ranging from 4000 to 4500 tonnes of which it is expected that a quantity of 2500 to 3000 tonnes may be exported.

These figures relate to 'ellettaria' or small cardamom which is known for its rich fragrance. This variety of cardamom forms an integral part of a variety of food stuffs, pharmaceuticals, perfumery, and beverages Its use is more pronounced among the Middle East Countries. Cardamom is also the chief feature of a ghawn' a unique beverage consumed in substantial quantities in this particular region

Competitors for the Indian cardamom are Guatemala, Tanzania, Sri Lanka and Papua New Guinea· Guatemala, with relatively fewer years of experience in the field, ventured into agressive production and marketing strategy and soon occupied the primary position accounting for 48 per cent of the world production, while Tanzania accounts for five per cent and Sri Lanka four per cent.

The countries, which accounted for increased cardamom exports from India during the years 1984-85 are Kuwait (1773 tonnes, valued at Rs. 468 million), Saudi Arabia (5074 tonnes valued at Rs. 1365 million to 5686 tonnes valued at Rs. 1300 million), Bahrain (80 tonnes valued at 26 million to 84 tonnes at Rs. 208 million), the United Arab Emirates (507 tonnes valued at Rs. 143 million to 620 tonnes worth Rs. 117.2 million), Qatar (150 tonnes each in 1984 and 1985 valued at Rs. 78 million) and Jordan (from 90 tonnes valued at Rs. 156 million to 246 tonnes of value Rs. 65 million)

(Economic and Commercial News 18(32), 1988, 7-8)

229 Indian cashew being priced out

The "high price" for raw cashewnuts fixed at Rs. 15.48 per kg (including sales tax) by the Kerala Government has 'resulted in Indian cashew kernels being outpriced in the international market.

Brazil and East African countries are the major beneficiaries whose sales price for raw cashewnuts are Rs. 5.85 and around Rs. 13, respectively, in the international market.

The Indian exports of cashew kernels during January-February 1988 registered a sharp fall of 27 per cent over the same period last year. They were put at 4,001 tonnes against 5,492 tonnes in 1987. The export earnings also declined by 31 per cent to Rs. 32.81 crores.

The cashew exports to the US India's major market and the world's largest consumer, during the period were 477 tonnes, which was only one-fourth of the quantity exported in the same period last year. In contrast, the Brazilian exports to the US was 3,000 tonnes.

The exports were also lower during the same period to Australia, the UK, Canada, FRG, New Zealand and West Asia. However, exports improved in the case of Soviet Union, Hong Kong, the Netherlands, Singapore and Japan.

Exports in the financial year 1987-88 (April-February) were also less, both in quantity and value at 35,666 tonnes and Rs. 312.78 crores against 40,318 tonnes valued at Rs. 321.43 crores. The percentage decline was 11.5 per cent in quantity and 2.6 per cent in value.

According to the exporting community, the raw nut prices fixed by the

Kerala Government would render Indian product "highly uncompetitive" in the international market vis-a-vis cashew kernels of other origins, and also other competing edible nuts.

There was also sharp fall in import of raw cashewnuts in February. The total-imports during January-February this year were only 74 tonnes compared to 3,779 tonnes last year.

(Financial Express 9 July 1988, 4)

230 Ginger export

Year	Quantity (in tonnes)	Value (in lakh Rs.)
1985-86	6,816.27	1089.35
1986-87	4,843.21	571.16
1987-88	2,404.00	430.00

(Spices News Letter 22(5), 1988, 3)

231 Export duty on coffee abolished

Keeping in view the interests of small growers, the Centre today abolished export duty on coffee with immediate effect.

This step will result in a revenue loss of Rs. 10 crore. A notification exempting coffee from export duty was issued today.

Some years ago coffee carried a duty of Rs. 10,000 per tonne . It was gradually reduced and stood at Rs. 1700 per tonne this year. Early this month the duty was reduced from Rs. 1700 to Rs. 1000 per tonne. The duty was estimated to yield Rs. 17 crore this year. After the reduced duty the revenue yield was expected to be Rs. 14 crores.

So far Government has collected Rs. 4 crore as export duty, an official spokesman said.

There are about 1,17,185 coffee growers in the country. Of these 1,09,701 are growers with less than four hectares and classified as small growers.

The Government was of the view that a step like abolition of duty would boost the small farmer and enable him to invest more, the spokesman said.

(Deccan Herald 27 August 1988, 1)

232 Exports of apples and fruits

The value of apples and fruits exported during 1984-85, 1985-86, 1986-87 and April 1987 - December 1987 is as follows:

Value: Rs. in Crores

Year	Value
1984-85	22.79
1985-86	24.30
1986-87*	25.00
1987-88*	26.70

(* April 1987 - December 1987) Provisional.

Exports of fruits is freely allowed. To increase exports, cash compensatory scheme at the rate of 22% by air and 10% by surface transport is presently allowed besides import replenishment of 10%.

(NAFED Marketing Review 18(3-4), 1988, 25)

233 Mango export rises

The export of mangoes during April-January 1988 was 14,900 tonnes as compared to 10,500 tonnes during 1986-87, thus showing an increase of around 4,400 tonnes within a period of ten months only. It had, however, gone down in 1986-87 as compared to 16,460 tonnes exported during 1985-86.

This was stated recently in Lok Sabha by Minister of State for Commerce, Mr. P.R. Dasmunshi in reply to a question.

(Economic and Commercial News 18(22), 1988, 6)

234 Fruit exporters can apply for monthly CCS

The office of the Chief Controller of Imports and Exports has allowed fresh fruit and vegetable exporters to make applications for cash compensatory support (CCS), on a monthly basis, in addition to the quarterly/half yearly/yearly frequencies.

This decision was taken following representations to the Agricultural and Processed Food Products Export Development Authority (APEDA) by exporters regarding denial of the monthly facility, which had automatically stood withdrawn in view of the policy provisions regarding exporters claiming Rep. benefits.

(Financial Express, 23 June 1988, 8)

235 Indian molasses export

Although the government had allowed export of five lakh tonnes of molasses from the country last month, sugar mills have not been successful as yet to get buyers for the commodity in the international market.

The current price for the sugar molasses in the international market is only around $ 50 a tonne, whereas the minimum export price of molasses for sugar mills work out to over Rs. 900 a tonne because of transport cost of Rs. 600 per tonne from UP to Kandla and storage cost of Rs. 200 per tonne .

Sugar mills will be incurring a loss on export of molasses at $ 50 a tonne as there is no cash compensatory support or other benefits for export of this commodity, industry sources point out.

Sugar mills are finding it difficult to store molasses, as the crushing in the current season is in full swing. Sugar mills are already carrying a stock of two lakh tonnes of molasses from the last sugar season.

The molasses output during the current sugar season is expected to be about 42 lakh tonnes as against the last year's production of only 36 lakh tonnes.

With no international buyers for molasses and industrial alcohol, glut situation in the country for both the commodities is going to be severe in the coming months, the source say.

(*The Economic Times* 25 July 1988, 6)

IMPORT

236 R & D Cess

The Government has decided to impose a five per cent cess on all payments for the import of technology from December 1, 1987. A Finance Ministry press release said that the levy known as research and development cess has been notified under the Research and Development Cess Act, 1986. Under this the government has formed a venture capital fund which will come into force from December 1, 1987.

(*Indian Food Packer* 42(2), 1988, 95)

237 Cloves imports under OGL

The Commerce Ministry has clarified that the open general licence (OGL) import of cloves and cinnamon was allowed in the new import policy, as it was found more advantageous than canalisation through public sector agencies.

In a communication to Mr. Mullappally Ramachandran, a Lok Sabha member from Kerala, the Ministry said canalised imports would henceforth be restricted to items of bulk nature or where the actual users are very large.

The Ministry underscored that OGL imports of cash crops generally produced in Kerala would not hit the interests of the growers as the actual quantity allowed to come in through these imports would be "limited".

According to the Ministry, import of rubber, copra and coconut oil continues to be canalised. These items cannot be imported by actual users under OGL.

Copra and coconut oil can be imported only by the State Trading Corporation or the Hindustan Vegetables Oils Corporation.
(*Financial Express* 26 July 1988, 7)

238 Import of almonds

Following the understanding reached recently between India and the United States, larger imports of Californian almonds have become almost certain. India has increased the value of import on a global basis to Rs. 26 crores from the earlier level of Rs. 18 crores.

The share of the US in the Indian market has been about Rs. 5 crores per annum and it is likely to go up significantly with the enhancement of the import value. Until 1981, India used to import almonds liberally under the open general licence, but because of foreign exchange considerations and political pressure, imports had to be restricted. Even new almonds are considered a luxury in this country.

According to reports received from the office of the US Trade Representation, India would lower its customs tariff on almond kernels from $ 4.18 to $ 3.73 a kg and also that the tariff on unshelled almonds would be maintained at the current level of $ 2.09.

The edible nut market circles perceive the current change in Indian policy as a victory for the persuasive efforts of USA. Last year, America produced a record almond crop of 297,000 tonnes out of the global output of around 425,000 tonnes. In the current year 1988, the US crop is forecast to be around 2,60,000 tonnes.

With such a large crop, prices of almonds have considerably eased. No wonder then that the US has identified India as a potentially larger market and succeeded in opening the gates to imports a little wider.
(*The Economic Times* 11 June 1988, 3)

239 Almond import licence

Each eligible dry fruit licensee will be granted an additional licence for import of almonds only valued at Rs. 20,000 irrespective of the value of the dry fruit licence to which he is entitled.

Announcing the modification in the import policy, a public notice issued by the office of the Chief Controller of Imports and Exports said, "at the time for applying for a licence in the second year of the current policy period, the importer will be required to furnish evidence of having made exports to the extent of 50 per cent of the value of the licence applied for".

The licence applied for will include both dry fruit licence as per sub-paragraph (W) and almonds licence as per new sub-paragraph (RA) in chapter 13 of the import policy under para 155.

Another public notice said that additional licences issued to export houses/trading houses after April 1988 will also be valid for import of almonds up to five per cent of the value of the licence and within the overall value of the licence.

(*Financial Express* 29 July 1988, 4)

240 Cultured shrimp production

Japan, India and Bangladesh, which dominated shrimp production and trade in the past have reportedly been adversely affected by the "cultured shrimp boom". The impact of the heavy supply of cultured shrimp from Equador, China and Taiwan is being increasingly felt in the American and Japanese markets, according to the seafood newsletter of the Marine Products Export Development Authority.

One of the major developments leading to substantial increase in shrimp production on a global level in the past three to four years has been the boom in shrimp production through culture methods. Commercial production of shrimp through culture methods in 1987 was estimated at about 350,000 tonnes, which was nearly double 1984 production level.

The share of cultured shrimp in the total world output of shrimp is now about 18 per cent as against two per cent in 1976 and five per cent in 1980. Asian countries account for more than 80 per cent of the world cultured shrimp production.

One of the important schemes under the fisheries development programme in the country is brackish water prawn (like large shrimp) culture. In spite of best efforts, "progress is not satisfactory", a recent official review said.

The study pointed out that the technology gap in this important sector of fisheries is very wide as some countries like Taiwan produce 20 tonnes of prawn per hectare annually whereas in India it is still 500 kg to one tonne per hectare.

Data compiled by the United Nations Food and Agriculture Organisation showed that India continued to top the list of major shrimp producing countries in 1986.

Shrimp production by four of the five largest producers - India, China, the US and Thailand showed a declining trend in 1985 while Indonesia was the only major shrimp producer which registered a marginal increase.
(*Financial Express* 29 June 1988, 5)

241 Biscuits manufacturing

With the steady increase in the cost of wheat and other inputs like sugar and vanaspati, biscuit producers have become apprehensive about the future of the industry. The biscuit manufacturing industry finds itself in the midst of a virtual struggle for survival.

The president of the Federation of the Biscuit Manufacturers of India, Mr. Sharad Chauhan, in a recent press conference in the capital, sounded pessimistic about the growth prospects of the industry. He sought to remove the general impression that biscuits is a luxury item consumed in urban centres.

Quoting the studies of the National Council of Applied Economic Research, he said that as much as 55 per cent of biscuit consumption is in rural areas. About 70 per cent of consumption is by the income group below Rs. 1500 per month. In India high priced fancy biscuits account for only 10 per cent of production. The annual per capita consumption of biscuits in India is low (700 g against 10-15 kg in developed countries). The industry feels that with the right kind of developmental and fiscal policy, the per capita consumption in the country could be raised to two kg, by the end of this century. To achieve this objective the annual growth rate of the industry's production (currently five per cent) will have to be doubled. Two major problems stand in the way. One, old machinery, and, two, burdensome fiscal levies. Fiscal levies on material inputs and final product taken together account for 40 per cent of the price of biscuits. The industry feels that even the withdrawal of the current excise duty on biscuits of 10 per cent may go a long way in reducing prices.
(*Beverage and Food World Annual* 15(1) 1988, 93)

242 Oil consumption for edible purposes and industrial uses during 1984-85

	(in lakh tons)
Edible purposes	45.60
Soap	5.00
Fatty acid	0.50
Paint and Lubricants	2.00
Export in terms of oil	1.00
	54.10

(*Oils and Oilseeds Journal* 38(7-12), 1986, 14)

243 Major development strategy for food processing outlined

Food processing Minister Jagdish Tytler on Saturday outlined a major development strategy for ushering in a "brown revolution" for absorbing surpluses in agriculture and allied sectors, and bringing about rural industrialisation.

Addressing a meeting of experts to discuss the work plan of the new Ministry, Mr. Tytler said major plans of the strategy are an imaginative licensing policy, induction of modern technology into the food processing sector, fiscal reliefs to encourage food processing, storage and packaging.

Mr. Tytler made it clear that all sectors of the industry - small-scale, cottage and village industries, co-operatives as well medium and large sectors - would be encouraged to invest in the food processing industry in view of its importance and recognition as a "sunrise industry"

Each of these segments have a distinct and definite role to play, he said.

Stating that an effective cold chain is of utmost importance for the development of a strong food processing industry, Mr.Tytler said it is necessary to nurture and give special treatment for the growth and modernisation of cold storage and refrigeration industries.

For induction of modern technology, he suggested that small and large units tie up with the best companies of the world for getting state-of-the-art technology in the food processing sector, starting right from production of seeds.

"In fact, we may even think of allowing a free flow of investment in this sector without reservations on the source of these funds", he said.

Similarly, it is necessary to treat the packaging industry as a high priority industry.

Underlining the need for a new marketing philosophy and strategy to tap the domestic and export markets, Mr.Tytler said a cluster approach is possible for small and medium industries on the "Amul pattern".

Small manufacturers could be the supply points for larger centralised units. Major co-operatives or state level organisations such as NAFED could also be utilised for this purpose.

All this development had taken place in a span of less than five years, he said

Mr. Tytler said it is unfortunate that although India ranked among the largest producers in milk, butter, groundnut, sugar, rice, wheat, potato, fish and eggs, the processing industries based on these raw materials are highly underdeveloped.

In fact, in actual handling of only one area - fruits and vegetables it is hardly 1.5 per cent of the total output.

In terms of principal export of the world, India's share in fruits and vegetables is only 1 per cent of the overall exports, fish represents 3 per cent, and meat and meat products 0.51 per cent.

Against these figures, Brazil's estimated production of orange juice concentrate alone is 600,000 tonnes, of which 550,000 tonnes are exported. Even the economically backward Philippines exports canned pineapple worth more than Rs.10 million annually.
(Deccan Herald 24 July 1988, 14)

TRADE INFORMATION

244 New division for food industry equipment

A food industry division has been set up by the Confederation of Engineering Industry (CEI) to look after the needs of the food processing industry by promoting production of equipment connected with it. The need has arisen as a result of the vast potential the industry holds for the engineering sector.

The food equipment industry includes some large and medium units and a large number of small units especially in the dairy equipment field. A phenomenal rise of Rs. 220 million in the demand for diary equipment in 10 years (from 1970 to 1980 speaks volumes of the scope of the industry.
(Chemical Products Finder 7 June 1988, 259)

245 Cashew board

The centre proposes to set up a national cashew board at Quilon on the pattern of commodity boards like the Rubber Board and the Spices Board, the Union Minister of State for Information and Broadcasting, Mr.S. Krishnakumar, said on Saturday.

He further said the proposed board would handle matters connected with cashew cultivation, processing, marketing and welfare of the workers in the cashew industry.
(Financial Express 24 July 1988, 1)

246 New pricing policy for edible oils

A new pricing policy for edible oils to boost indigenous production and cut imports is now under the active consideration of the Government.

The main planks of the proposed policy are a phased raising of the public distribution system (PDS) prices, prescription of a band of prices beyond which the consumer prices will not be allowed to fluctuate, and market intervention by the National Dairy Development Board (NDDB) through imported and domestic stocks for maintaining the prices within the hands.

Under the new policy, the public distribution system prices are proposed to be raised gradually over the next two to three years to equal the support price of domestically produced oil. A band of prices with maximum and minimum limits for different oils and for different months will be prescribed by the Government. In case the price goes beyond the upper limit of the band, the Government would release the oil to bring it back within the band. Similarly, when the price falls to a level lower than the minimum limit of the band, the Government would buy oil from the open market to push the prices within the band.

The task of fixing the band of prices, which will be fair both to the consumer and the producer, is proposed to be entrusted to the Chief Economic Advisor in the Finance Ministry.

The price band to be prescribed for each oil year, will take into account inflation and the cost of carrying the stock over to the lean season.

It is proposed that NDDB will buy oilseeds from the open market on a commercial basis. The price at which NDDB will buy the oilseeds will not be less than the support price fixed by the Government. At the same time it will be sufficiently high to give an incentive to the farmer.

This, it is felt, will encourage the farmer to improve the production of oilseeds, particularly, in years of a good crop when the trade tries to depress the prices.

The PDS prices of edible oils are proposed to be raised as it is felt that they are much below the economic prices. The low prices have pushed up the consumption and resulted in higher imports. It is, therefore, felt that these prices should be gradually raised to equal the cost of edible oil produced domestically and calculated on the basis of the support price declared by the Government.

It is also pointed out that the consumption of edible oils is high among the richer classes compared to the lower classes which depend on the PDS. The urban rich class is estimated to have a per capita consumption of about 43 g of edible oil per day against 10 g per day by the rural and urban slum dwellers.

It is also pointed out that despite heavy imports and their release at controlled prices, the edible oil market has remained one of the most speculative markets. This can be overcome only through an integrated pricing and marketing intervention policy which will increase production and curb consumption.
(Financial Express 29 June 1988, 12)

247 Centre approves setting up of NCTI

The Union Government has approved the setting up of a National Centre for [illegible] information (NCTI) and the process of implementing a computerised trade information system is expected to start soon.

Disclosing this, Dr. K.Subramanian, Additional Director, National Informatics Centre, said that though it had taken the government 15 years to accept the concep of NCTI, of late some significant progress had been made in the fields of trade information.

A recent attempt had been to design a computerised information system for the foreign trade division of the Ministry of Finance covering general country information, economic indicators, information on domestic sectors, commodity statu joint ventures, and the like. Besides a joint venture cooperation programme betwe the European Community (EC) and India for the sharing of information and formulati of standards is in the advanced stage of implementation.

Plans are also afoot to set up a special cell for information technology within the Bureau of Indian Standards (BIS) to deal with the important aspects of the impacts of information technology standards, Dr.Subramanian added.

Providing details of the proposed trade information centre, Mr.P.V.Rao, Chief of the Trade Information and Statistics Division of TDA, and also in charge of giving the finishing touches to NCTI, said that this project estimated to cost about Rs. 10 crores envisaged installing a central computer terminal and networkin all the international TDA centres, consulates and embassies, and the Indian Trade Centre at Brussels.

Discounting fears of TDA being rendered redundant with NCTI coming up, Mr. Rao said that the Gotan committee report itself had recommended that TDA shoul specialise in trade information and as things stand now the proposed body would function under the banner of TDA.

At present TDA's operations extended to merchandising, trade information and research and analysis.

(*Financial Express, 9 July 1988, 12*)

248 Richest man in the world

The richest Americans this year are the members of the Mars family of Las Ve who are in the food business with assets of $ 12.5 billion.

(*The Economic Times, 26 August 1988, 14*)

249 Incentives soon for food processing industries

The Finance Ministry is expected to come out with certain "concessions" for the food processing industries.

This was stated by the Minister of State for Food Processing Industries, Mr. Jagdish Tytler, in reply to Mr. K. Kunjambu and supplementaries in the Lok Sabha on Thursday.

Agreeing with members that the country had a vast potential for export of fruit and vegetables, he said it would be one of the main thrust areas of his newly created department.

Mr.Tytler said around 25 per cent of the yearly fruit produce of 23 million tonnes and 43 million tonnes of vegetables went as "post harvest handling loss".

Efforts would be made to reduce this loss substantially he added.

(*Financial Express*, 5 August 1988, 4)

FOOD REGULATION, QUALITY CONTROL AND HYGIENE

250 Rapid detection of Aflatoxins in poultry feed/ingredients

A simple, economical, reliable and rapid method, Pressure Mini Column Technique (PMC) has been developed. The method uses a glass syringe packed with certain chemicals which bind specifically to the aflatoxins and can be visualized as a blue flourescent band under UV light. The whole process of sample analysis takes just one hour and the minimum detection limit being 50 ppb for feed and 20 ppb for feed ingredients. The method works out considerably cheaper than the conventional TLC method and is quite rapid.

For further details contact: Dr. Beedu Sashidhar Rao, Taulava Bio-Analyticals 1-7-1072/5/B, RTC Cross Road, Musheerabad, Hyderabad 500 020

(*Poultry Guide* 25(7), 1988, 90)

TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES

251 NCDC clears nine co-op processing projects

The National Cooperative Development Corporation (NCDC) has cleared nine new projects in the field of cooperative processing with a total investment of Rs. 149 crores.

An official release said on May 25, that these projects related to copras processing in Kerala, a vanaspati plant in Maharashtra, an integrated rice bran oil project, potato processing plant and a spinning mill in Punjab, a distillery unit i Maharashtra and modernisation or expansion of two cooperative sugar factories in Punjab and one in Maharashtra.

NCDC will provide assistance of Rs. 111 crores for these projects. These decisions were taken at a meeting of the NCDC board which was presided over by the Union Minister of State for Agriculture, Shri Shyam Lal Yadav.

The board also decided to take up research and development programme for rice bran for augmenting the base of indigenous edible oil production.

(*Nafed Marketing Review* 18(5-6), 1988, 22)

252 Goodricke to make instant tea

Goodricke group limited's long-standing bid to enter the high value segment of the international tea market has got off the ground following clearance of the company's bid for acquisition of a pilot plant for manufacture of instant tea from the Tea Research Association (TRA), Jorhat. Problems that had delayed shifting of the plant from its original location to the company's premises have been resolved and the unit is now being installed at Danguajhar tea estate.

According to the company's managing director, Mr. S.K. Bhasin, the pilot plant, purchased from TRA, was likely to become operational in the next few months, and test marketing of the product in the United States and Britain was likely to commence by the end of the year. The Rs. 50 lakh pilot project would be followed by a Rs. three crore full-scale plant which was expected to go into commercial production by end - 1989, he said.

Goodricke has identified that the United States as its major market for export of instant tea. Recent reports have, however, indicated a declining trend in the demand for the product in that country, thus forcing the company to revise its marketing projections, Mr. Bhasin said. In the initial stages, the company is projecting exports of around 1.5 lakh kg of instant tea per annum primarily to the US and Britain, at a bulk average price of Rs. 140 per kg. inclusive of all incidental expenses.

(*The Economic Times* 12 July 1988, 4)

253 Indo-Japanese tie-up in shrimp processing

An agreement has been signed between Baby Marine Group, a Kerala-based firm, with Cosmos Food Limited of Japan for setting up a joint venture for processing and export of frozen dry shrimps. The project entails import of new technology from Japan and will be 100 per cent export-oriented.

The Union Minister of State for Commerce, Mr. P.R. Dasmunshi, who had extensive discussions with Japanese trade Ministers and representatives of leading business establishments during his recent visit to Japan, disclosed that Japanese trading giants, Mitsui, Mitsubishi, and Marubeni have agreed in principle to cooperate with Indian firms in the areas of shoe-uppers, marine products, petrochemicals, garments, engineering plastics and pharmaceuticals. Representatives of these companies informed the Indian Minister that they would soon be sending a team to India to hold further talks on the nature of their respective investments. Mr. Dasmunshi said that a meeting with Indian exporters of marine products to formulate the strategy for maximising the sale of sea foods to Japan would be held in August.

According to the Minister, India would have a good scope for exporting mangoes to Japan after a new heat treatment plant is commissioned in India. The Japan International Information Agency is said to be considering a proposal for technical and financial assistance from Japan for development of prawn hatcheries in the coastal regions of India. The proposal, likely to be cleared by JICA soon, came up for discussion during a meeting between Mr. Dasmunshi and the Japanese Vice Minister for Agriculture, Forestry and Fisheries.
(*Economic and Commercial News* 18(33), 1988, 2, 5-6)

254 Commercial production of iron-fortified salt

India's first iron fortified salt project (IFSP) is all set for going commercial. Two trial runs have already been conducted and according to the company's (Tamil Nadu salt corporation) chairman, four laboratory tests have given a clean chit to the product last month.

The project needs at least Rs. 27 lakhs working capital. Upon its request, a high-powered state level committee had already recommended release of Rs 10 lakhs by the State Social Welfare Board and another subsidy from the Centre to the tune of Rs. 13.5 lakhs - equivalent to three months subsidy. He stated that within six-weeks of receipt of these amounts the corporation will commence commercial production.

This UNICEF funded project is coming up in Vallikonam in Ramanthapuram district in Tamil Nadu. With a capital cost of Rs. 25 lakhs, the plant and machinery cost of Rs. 5 lakhs is borne by the UNICEF and Rs 9 lakhs by the Food and Nutrition Board of government of India towards building, land and others.
(*The Economic Times* 14 July 1988, 10)

255 Pineapple juice plant opened in Tripura

The country's first pineapple juice concentrate plant was inaugurated at Nalkata in Tripura on Friday by the Union Minister for food and civil supplies, Mr. Sukh Ram.

Set up at a cost of Rs. 3.75 crores by the North Eastern Regional Agricultural Marketing Corporation Limited (Neramac), a government of India enterprise under the department of food, the plant has a capacity of producing between 152 to 200 kilograms of pineapple juice concentrate per hour, depending on its brix content. To maintain this level of production, the unit would require raw materials input of around 2,000 pineapples per hour.

Located in the heart of Tripura's pineapple and orange growing belt, the unit will provide direct employment of 500 persons and will benefit thousands of small growers. The plant is equipped with state of the art machinery imported from USA, Sweden and Italy and was completed in a record time.

The manufacturing process entails concentrating the fruit juice in one step from an initial brix. 11 to 65 degrees with heat contact time of less than one second to ensure the finest quality concentrate. The sterilised concentrate is then aseptically packed in metallised plastic laminated bags.
(*The Economic Times 12 June 1988, 8*)

256 Mazda packaging unit

The highly sophisticated computer controlled co-extrusion five-layer blown film line of the Mazda Packaging, built by world leaders Reifenhauser, West Germany, has gone on stream. This is the only company in the country, which is equipped with five extruders instead of four, giving it an unparalleled versatility in film composition. The company has already received a number of orders for this Mazdapac film, which is expected to replace conventional packaging materials like tin, glass, polypots, etc. for edible oils, ghee, lubricants, fruits, cosmetics and industrial products.
(*Industrial Products Finder 16(10), 1988, 73*)

PERSONALIA

Nil.

RAW MATERIALS

257 Sunflower cultivation

The Minister of State for Agriculture stated in Rajya Sabha that the area under sunflower cultivation in the country is estimated at around 7 lakh hectares.

Vigorous efforts are being made to increase the production of sunflower through implementation of Centrally Sponsored National Oilseeds Development Project in the States of Karnataka, Maharashtra, Andhra Pradesh, Tamil Nadu, Gujarat and West Bengal where there is potential for development of the crop.

(*The Oils and Oilseeds Journal* 39(1-6), 1986, 40)

258 Bulgarian apple varieties

The Union Minister of State for Food Processing Industries, Mr. Jagdish Tytler said that his Ministry is examining the possibilities of growing high yielding varieties of apple plants received from Bulgaria which would increase the apple production four-fold in the three years.

Speaking at a function after inaugurating the fourth bread plant of Delhi unit of the Modern Food Industries Ltd. here on Tuesday, Mr. Tytler said that the plantation of these new varieties of apple would be encouraged to get more production.

In this connection, Mr. Tytler referred to the problems of apple growers of Himachal Pradesh and Jammu and Kashmir who have to sell their produce at a throwaway price due to non-availability of cold storage and processing facilities. He said that his Ministry would do its best to help the growers by providing them necessary facilities.

(*Financial Express* 24 November 1988, 7)

259 A new edible oil from flax

Biotechnica (Canada) and Australian CSIRO are collaborating to develop a new edible vegetable oil from flax seed. Under a proposed joint venture the partners will develop varieties of flax which produce oil similar to sunflower or corn oil. By the mid of 1990s edible oil flax may be grown on several million acres as an alternative crop to wheat.

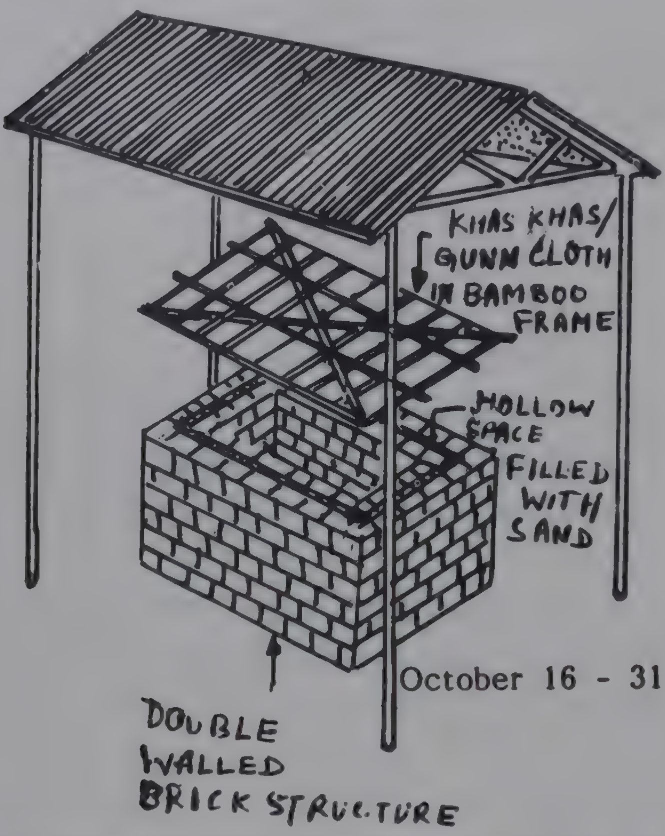
(*Chemical Weekly* 34(9), 1988, 78)

STORAGE AND INFESTATION CONTROL

260 Zero-energy cool chamber for fruits and vegetables

A zero-energy cool chamber developed by the Indian Agriculture Research Institute, New Delhi, has emerged as the poor farmer's refrigerator to help them in cold storage of fruits and vegetables.

COOL CHAMBER



October 16 - 31, 1988.

It works on the simple principle of "evaporative cooling". When unsaturated air comes in contact with a wet surface, water evaporates and produces a cooling effect. The chamber can be constructed using easily available raw material like bricks, riverbed sand, gunnybags and bamboo. For the supply of water, storage tank should be provided inside the chamber.

The walls of the cool chamber are of a double layer of bricks, the two layers being 7.5 cm apart, while the floor is made of a single layer of bricks. The space inside is filled with wet riverbed sand. A bamboo frame covered with the grass 'khus khus' covers the top of the chamber.

The chamber, which is estimated to cost around Rs. 250, should be constructed in a shed to keep away from direct sunlight but must be well-aerated.

Crates of fruits and vegetables are kept in the chamber and covered with a polyethylene sheet to prevent water from falling on them. Water is sprinkled twice daily on the bricks, sand, khus-khus mat and bamboo frame to maintain the required temperature and humidity.

The average maximum temperature of the chamber is lower than the outside temperature. Periodic disinfection of the chamber by spraying with chemical helps to prevent any fungal attacks.

The low-cost chamber, can be installed temporarily at any site like fields, packing stations, railway stations and whole-sale markets.

With a little modification, it can also be used for mushroom growing, fermentation, short-term storage of eggs, bread, butter, cheese and milk.

(P.T.I. Science Service 7(20), 1988, 2-3)

Keeping mushrooms fresh

People who understand the culinary delights of the common mushroom also know how difficult it can be to keep it fresh. The young, freshly-picked mushroom with its white flesh and "button" appearance is considered more appealing. Mushrooms can become old within hours or days. Cold mushrooms do not mature as fast as warm ones, so growers tend to vacuum chill them to reduce the temperature as quickly as possible. The vacuum evaporates moisture on the skin, rapidly drawing off the latent heat.

Cooling, however, does not stop the skin from turning brown which is due to a chemical reaction between phenols and the enzyme, tyrosinase. If the mushroom is bruised and the cellular compartments are damaged, which also occurs with ageing of the mushroom, then the two chemicals come together. The enzyme then catalyses the oxidation of the phenols to produce reddish pigments that interact with each other to produce brown melanin, which makes an old mushroom look so unappetising.

In addition to cooling, therefore, mushroom packers have tried to design punnets that limit the amount of oxygen reaching the mushrooms. A complete lack of oxygen, however, stops the mushrooms from respiring, which also shortens their shelf life. Putting holes in the plastic film covering the mushrooms limits the amount of oxygen without stufling them completely, but then water vapour builds up.

Kerry Burton, a horticulturalist from the Institute of Horticultural Research at Littlehampton, has found that mushrooms keep fresh longer in punnets wrapped in porous film which lets gases such as oxygen pass through.

A patch of "microporus" film of a few square centimetres allows just enough oxygen into the punnet to let the mushrooms breathe, but not enough to oxidise the phenols. The film also lets just enough water vapour pass through without the mushrooms drying out completely. Burton found that the film keeps the mushrooms white and buttoned-up for several days longer than punnets wrapped in ordinary film with perforations.
(*New Scientist* 117 (1597), 1988, 38)

262 Doubling seed storage life

A team of scientists at the University of Gujarat, Ahmedabad, has found a way to double the average storage life of the seeds of certain crops. The technique involves storing the seeds in polythene bags at low temperature and later subjecting them to a chemical called gibberelic acid (GA-3). The GA-3 solution can improve the performance of aged seeds under both laboratory and field conditions. Peanut seeds can be stored for longer duration at 10 degrees celsius if the kernels are stored intact in pods. The studies have shown that the seed storage is most effective when the seeds are kept in polythene bags of thickness ranging from 300 to 700 guage.
(*Documentation Bulletin* 71, 1988, 11)

263 Frozen shelf-life of meat extended

A longer frozen life for meat is promised by a new process developed by PMC's Marine Colloid Div. (Phila.,USA). The process has been patented (US Pat 4,196,219) and provides a way to extend the storage life of frozen pre-cooked meat, poultry, and fish, through the use of an edible coating made with carrageenan, a seaplant extract.

The carrageenan coating works to reduce moisture loss in the frozen consumer food product. The company is keen on licensing the technology.

(Chemical Weekly 34(1), 1988, 81)

264 Subsidy for storage bins purchase in UP

The Agro Industries Corporation of Uttar Pradesh has announced a substantial subsidy for small and marginal farmers to acquire grain storage metal bins, with a capacity ranging from 3 to 10 quintals.

The subsidy for the bins, designed and developed by the Indian Grain Storage Institute (IGSI) under the Union Food Ministry, will be 25 per cent for small farmers and 33.5 per cent for marginal farmers.

This was announced by Dr. Sonelal, Director, the Hapur based IGSI to mark the celebration of the world food day in one of the Institute's adopted villages, Badhola, in Uttar Pradesh.

(Financial Express 21 October 1988, 8)

265 Chitin food uses

Crabs and lobsters are getting a raw deal. The shells of these and other crustaceans are 15 per cent chitin, the second most abundant biological material on earth.

The practical use of chitin is hampered by its insolubility, though it can be acetylated to an acid-soluble derivative chitosan. Potential applications for chitin or chitosan include use as a dietary supplement to sequester cholesterol, a slow release material for drug implants, or a source of red dye. Existing uses include surgical sutures and burn wound dressings.

Zikakis has been studying chitin or ground shells as dietary supplements to stimulate the growth of lactose degrading bacteria in the gut Lactose is the main constituent of whey, a major pollutant and waste product of the cheese industry. If this application comes to fruition, some of the 5000 Mkg of whey disposed of in the USA each year could become a useful nutritional source for animals and humans.

Meanwhile, Canadian scientists have developed a promising water soluble derivative of Chitin: N,O-carboxymethylchitosan, or NOCC. Ernest Hayes of Acadia University in Nova Scotia said NOCC can be applied in a thin film to the surface of fruit and so keep it from oxidative spoilage for up to eight months in cold storage. With colleagues who set up a company, Nova Chem, to develop NOCC, Hayes is applying to the US authorities for approval to use NOCC on fruit that is industrially processed - i.e. washed and peeled before it reaches the consumers.

(Chemistry and Industry 20 June 1988, 377)

266 A new weapon against rice pest from water weed

At the Regional Research Laboratory Hyderabad, scientists have discovered a deadly weapon against rice moth (Corcyra cephalonica), a serious pest of stored grains.

A compound isolated from the extract of the aquatic weed, "water hyacinth", is able to kill the moth at the larval stage at a dose of less than a millionth of a gram.

Most of the larvae became black, exuded their body fluids, and died before reaching the pupal stage.

Even crude extract of water hyacinth showed insecticidal properties. The larvae treated with the extract either died or developed into deformed adults lacking the ability to procreate.

According to the RRL scientists, water hyacinth extract contained sterols that have the potentiality to disrupt the growth and reproduction of rice moth.

Insecticidal potential is the latest in the list of beneficial use of the abundantly available water hyacinth that was once considered a nuisance weed.

(PTI Science Service 7(21), 1988, 5-6)

FOOD ADDITIVES

267 Low-calorie sugar substitute soon in market

A low-calorie granulated sugar substitute called 'Sweet'n Low has been launched in India by IBIS Health based near Tumkur, Karnataka. The brand has an international following in 29 countries around the world and enjoys a market share of over 72% in the USA.

The complete marketing and distribution franchise for Sweet'n Low vests with Pioma Industries. The product will be made available at several shops, including chemists', according to a press release issued here.

(The Economic Times 8 October 1988, 4)

268 New artificial sweetener

CADILA Chemicals will soon be marketing Aspartime, an internationally accepted sugar substitute. It is the first major breakthrough in sugar substitution and has been approved by the US Food and Drugs Administration (FDA) as sweetener for foods such as breakfast cereals, beverage mixes, tea and coffee, chewing gum, gelatine, puddings, dairy toppings, etc.

(Chemical Products Finder 7(4) 1988, 157)

269 Butter flavour developed for micrawave popcorn

Microloc, natural butter flavor Wonf's, a new series of natural butter flavours designed for ultimate flavour performance in microwave popcorn, have been introduced by Felton.

The development of these new flavours is based on Felton's revolutionary new microwave research. The Delta T theory, which specifies the precise carriers, solvents and flavouring agents which will provide maximum flavour strength, stability and integrity in microwave applications.

Microloc butter flavours provide rich creamy, full-flavoured taste and aroma to microwave popcorn: flavour and aroma which remain after popping, when and where you need it most.

Available in liquid oil soluble concentrated, and paste forms, they are recommended for use in all natural flavoured microwave popcorns at 3.0%.
(Food in Canada June 1988, 44)

PROCESSES

270 Milk/juice drink marketed in Germany

A German entrepreneur has succeeded in combining fresh milk with natural fruit juices into a stable homogenus refreshing drink. The drink comprising the two components at a 50:50 ratio is packaged in 500 ml light weight bottles.

It is rich in high value proteins, carbohydrate and calcium and contains 10 important vitamins from 10 different fruits. The drink has successfully undergone long-term marketing trials in Germany and is now being sold nationwide. It is reported to be popular with consumers of all age groups.
(Chemical Weekly 34(9), 1988, 83)

271 A better apricot juice by a new cellulase process

A new process developed by USDA for apricot juice will provide a clear apricot juice. At present only a thick, cloudy juice is made from the pulp because it is difficult to squeeze juice from the fibrous fruit.

The USDA researchers have successfully produced a clear apricot juice at the 15 gal (feed) scale by using a blend of enzymes - to break down the cellulose fibres. The juice is then removed and clarified through ceramic filters.

Low cost cellulase ($ 3/lb) has only recently been available in USA from Genencor Inc. This has made possible the commercialization of the above process in the near future.
(Chemical Weekly 34(1), 1988, 81)

272 Backwards osmosis drains the alcohol out of beer

A British company has found a new way to make low-alcohol beer using a "reverse" osmosis. Elga of High Wycombe, claims its process is cheaper and produces a better-tasting brew than other low-alcohol beers.

In Elga's technique the beer is brewed in the normal way, and placed in a tank with pure water on the other side of a thin separation membrane. This membrane allows both water and alcohol molecules to pass. When enough pressure is applied to the beer, alcohol and water molecules will pass from it into the pure water, and can be pumped away. Between 40 and 60 per cent of the alcohol is removed in one cycle but the procedure can be repeated to remove as much alcohol as the brewer wants.

Previous methods involved heating the beer to boil off the alcohol. The heating involved in this low-temperature distillation process causes chemical reactions between the constituents of the beer which alters its taste. The process is also relatively expensive. With reverse osmosis there is no heating, so the process is cheaper and it preserves the taste.

(New Scientist No.1627, 1988, 34)

273 Microencapsulated fish oil powder

Danochema A/S has developed recently a dry powder microencapsulated Omega-3-fatty acid product (Dry marine PUFA 18:12). The product has been designed for use in the food processing industry and lends itself to the enrichment of dry products.

Microencapsulation enables concentrates of the oil to be presented as a dry stable powder. The product contains 30% fish oil with a ratio between eicosapentanoic acid (EPA) and decosahexanoic acid (DHA) of 18:12.

(Chemical Weekly 34(5), 1988, 82)

274 Dry fruit from cashew

A pilot plant for the production of upgraded dry fruit from cashew has been set up at Palghat by Prof. P.M. Edassery of the Petaline Flower Food Research Station, Palghat. In the process the ripened cashew apples are sliced and cured for one hour in hot antastrin solution. Thereafter, it is dried in the sun and later soaked in sugar solution.

The dried fruits can be a superior substitute to other dried fruits.

(The Times of India 26 November 1988, 10)

275 High-yielding cardamom - through tissue culture

Large scale production and continuous propagation of high yielding cardamom saplings by tissue culture technique has been perfected by the Hindustan Lever Research Centre (HLRC).

Scientists of the centre here have succeeded in regenerating 10,000 plantlets of cardamom from a single shoot-tip and in the past one year have supplied 20,000 such saplings to different plantations in the country.

"By the end of the year, another 10,000 plantlets will be supplied to the planters while for 1989, two lakh plantlets are on their way Dr. S. Bhaskaran, Head of the Tissue Culture Department told PTI. The plantlets are supplied when they are three-month old, having a height of about nine to 12 inches.

A necessary requirement for realising the potential of micro-propagation techniques is successful transfer of tissue culture raised shootlets to the soil. "We have achieved a hundred per cent success rate in the transfer of regenerated plantlets to soil after in vivo as well as in vitro rooting for large scale multiplication," Bhaskaran said.

The scientists obtained the shoot tips of cardamom from rhizomes of high-yielding, disease-free varieties. These have given about one to two kilograms of cardamom by dry weight per plant. Hence, there is a potential yield of 2,400 kg per hectare considering that about 1,200 plants can be grown in a hectare.

"Cardamom is conventionally propagated either by seeds or rhizomes. While the seed-raised plants show high variation, multiplication by rhizomes is slow and prone to diseases. Moreover, it is not possible to plant large areas with available rhizome stocks. Under these circumstances, tissue culture provides a faster and better method of multiplication", Dr. Bhaskaran added.

(P.T.I. Science Service 7(21), 1988, 6)

276 Industrial uses of sorghum

The College of Agricultural Technology of the Marathwada Agricultural University has conducted research on sorghum processing to produce value added industrial products. A high quality starch can be produced from hybrid sorghum and the sorghum starch can be converted to sweetners like liquid glucose. I.C.A.R. sponsored a scheme on malting of sorghum. Under the scheme the process has been standardised for malt production and utilization of malt in weaning foods, bakery products and beer.

Processes have also been developed for production of sorghum flakes and sorghum pops for use in snack industry. Pearled/polished sorghum can be utilized in production of various sorghum products.
(*University News* 9 May 1988, 14)

277 A sonic food-drying system

A sonic food-drying system developed by researchers at Purdue University and sponsored by the US Development Corporation, Indianapolis, is being installed in a plant in Desert Hot Springs, Calif. The process being scaled up to commercial size is expected to be on line by middle of 1988, with one line for contract drying and another for large-scale development work.

The system uses sonics and heat to blast air past the material to be dried. The result, reports, Jay S. Marks, associate professor in Purdue's Food Science Department, is that product temperatures are relatively low and drying times are up to 4 to 10 times faster than with conventional methods.

Marks reports that pilot units have been able to dry heat-sensitive products that conventional systems cannot handle, such as orange juice and high-fructose corn syrup (HFCS). This technology one day could even benefit processors of hazardous wastes, drugs and chemicals.
(*Chemical Weekly* 34(9), 1988, 82-83)

78 Cyclodextrins to inhibit browning in fruits

Hicks and his colleagues at the USDA's Agricultural Research Service Centre in Philadelphia found that in fresh apples beta cyclodextrin (with 7 glucose units) with or without a side branch was better than alpha or gamma cyclodextrin (6 or 8 glucose units) in retarding browning, which it could do for 1-2 hours. Fruit juice on its own turned brown in 10 to 20 min.

The browning reactions are catalysed by polyphenol oxidase, an enzyme that helps to oxidize simple phenolic compounds in the fruit to quinones, which then react together to form brown pigments. Hicks suggested that the cyclodextrins shaped like hollow cones with the tips cut off, probably act by taking the phenolic compounds inside themselves to form inclusion complexes. The phenolic compounds would thus be protected from the oxidizing enzymes.

The browning could be delayed for several days when cyclodextrins are used in combination with other browning inhibitors, like ascorbic acid (Vit. C). The researchers have recently found that a derivative of Vit. C namely ascorbic acid – 2 phosphate is also a potent inhibitor of browning, acting as a slow-release version of the compound.

While the USDA team has filed patents on the use of cyclodextrins and ascorbic acid-2-phosphate as browning agents, the cyclodextrins are not approved as yet for food use in USA. Hick's research group, nevertheless, has found that the insoluble polymers of cyclodextrins do the trick as well. These polymers can be stirred into fruit juices for a period and then removed by filtration, leaving a product that will resist browning indefinitely.

(Chemical Weekly 34(9), 1988, 82)

79 Cholesterol free egg

With more and more people watching their cholesterol intake these days, eggs are getting a bad name. After seven years of research, a Company, Bon Devite (Lynden, Wash. USA), has applied for a patent on a cholesterol-free egg called Egglite. Patents, trademark and FDA clearance are pending, reports the company.

Egglite is formulated exclusively from food products and contains only one-third of the calories of a hen's egg. This egg substitute has a yolk contained by a sack made of a synthetic poultry membrane. It can be used whole or separated, as a yolk or egg white substitute. The researchers used an edible agent to cross-link the protein of the egg white to the protein of the yolk.

Egglite can be fried, poached, scrambled, cooked over easy, soft and hard-boiled or can be used for basting. The eggs do not come in oval shells, they are instead packed in a plastic cup in which they can be cooked.

(Chemical Weekly 34(9), 1988, 81)

280 Efficient oil extraction - Use of enzymes

The Sarkatcharch Research Commercial successfully used enzymes to facilitate oil extraction. According to Krystyne Sosulski oil extraction from Canola Sunflowerseed, and other oil-rich plant materials commonly involved two stage process of prepressing followed by hexane extraction; each of these processes is preceded by grinding, cooking or flaking, mainly with the object of mechanically disintegrate the cell walls and release the oil droplets with efficiency.

According to Sosulski the enzymes, commercial products exhibit strong cellulose, hemicellulose, pectinase, gluconase, and amyloglucosidase activities. Enzyme treatment of flaked seed for three hours, is found to reduce the solvent extraction time by one-half. It is found during research that seeds passed through an expeller, adjusted to fullpress conditions over 90% of the oil is extracted only by pressing alone. Consequently, oil thus left is less than 6 per cent. The solvent extraction of the presscake will not be economically justifiable. This will result in eliminating the step which will help in substantial savings in processing costs.

Enzymes, it is found, will be effective in enhancing the oil extraction rates by either the solvent or expeller system, and best results are obtainable by using mixed enzyme activity.

Conclusion arrived by Sosulski indicates the enzyme use can be successfully introduced into oil seeds processing to obtain more oil than from seeds that are not enzymatically treated. Study shows that enzymes changed the cell wall structure to facilitate oil extraction. The process is helping in not only releasing of more oil but also help in expediting the extraction process faster. Oil thus obtained will be yellower in colour and the meal will be good in quality with increased stability.
(The Oils and Oilseeds Journal 39(1-6), 1986, 90)

281 Mechanical oil pressing and processing system

UNATA, C.V. a Belgian company, has developed a mobile oil-pressing and processing machine which can be operated in any part of the world. The system works like this. A cage or drum filled with well-prepared seeds or fruits is put under a press-plate which is attached to a jackscrew. When the arms of the jackscrew are turned, the press-plate comes down and thus starts exerting pressure on the mass in the cage. A receptacle underneath the cage allows the oil to leak into a bucket. Called the UNATA 4201, the system is very simple and mechanically operated. Coconuts and all types of oleaginous seeds can be pressed in the machine. A modified version of the machine incorporates a hand-driven roller-mill, hammer-mill, nut cracker, coco and cassava-grater. UNATA 4201 is commercialised in Senegal, Ghana, Zaire, Cameroon, Tanzania, Vietnam, Togo and Haiti.

For details, contact: Mr. Yvon Princen, UNATA C.V.,
G. Van Den Heuvelstraat 131, 3140 Ramsel-Herselt, Belgium.
(Asia-Pacific Tech Monitor May-June 1988, 22)

BY-PRODUCTS AND WASTE UTILIZATION

-Nil-

PROCESSED PRODUCTS

282 Powdered beef

The product can be used as a condiment and as stock for preparing soup and meat pie which takes only 2 min to prepare. It contains 60% protein, has high nutritive value, and is a good complement to diet. It does not require refrigeration and can be stored for 10 years. The indicative price is US $ 20/kg fob Mexico City. (*Invention Intelligence July 1988, 191*)

EQUIPMENT AND MACHINERY

283 Liquid/paste filling machines

Elmar Industries, Inc, USA, manufactures a range of piston fillers for the food industry. Fillers from 6 to 72 stations for a wide range of liquid and paste products can be supplied. Containers may be big or small, in plastic, glass, composite or tin. The fillers are available with all accessories including drives, bowl agitators, bowl drains, bowl covers, level controls, etc. Interested parties should contact with specific details regarding product or products to be filled, indicating filling temperature, viscosity, specific gravity, type of container, diameter, height, size of opening, number of containers per minute and the type of seamer or copper used.

For further information write to: Age Technologies Pvt Ltd, 712 GIDC, Makarpura, Vadodara, Gujarat 390010. (*Industrial Products Finder 16(12) 1988, 227*)

284 Rotary powder filling machine

Autopack England offers semi automatic and automatic rotary powder filling machine having filling speed of 25 to 100 fills/minute. The machine can handle powder products like milk powder, fruit, salts, spices, free-flowing and non-free-flowing powder products, etc. Product is filled by weight with the help of microprocessor based control systems. Linear weighing machines are also offered with vibratory feeders.

For more details write to: Panpack Marketing, Panchal House, PO Box 48, Station Road, Anand, Gujarat 388 001
(Chemical Products Finder 7(4) 1988, 128)

285 Aseptic packaging systems

Central India Packaging offers Bowater Aseptic Liquid Packaging Machines and bags. Aseptic packaging is suitable for low and high acid products eliminating processing contamination and allowing transportation and storage at ambient temperatures. Various types of products such as juices, ketchups, pastes and concentrates of fruits and vegetables, milk and milk products, can be packed and stored at ambient temperatures for long time. Pack sizes range from 3 to 250 litres all of which can be filled on the same machine with minor adjustments. Various sizes of filling machines are available for packing 1,000 to 6,000 litres per hour. Fully automatic machines with higher filling capacities are also available. Various types of models to operate on a unit basis or part of an integrated automatic filling line can be supplied. Standard sterilants can be used for cleaning the machines. The aseptic bags come in sizes from 3 to 250 litres.

For more details write to: Central India Packaging Co Pvt Ltd, 3-6-140/2 Liberty Road, Himayathnagar, Hyderabad, Andhra Pradesh 500 029
(Chemical Products Finder 7(3), 1988, 21)

286 Manual form-fill-seal machine

Bhargava Industries offers manually-operated form-fill-seal machines suitable for smaller batch production and for small scale manufacturers. This machine is a link between hand filling of a product is pre-made poly bags/pouches and fully automatic form-fill-seal machine. The machine can pack a variety of products in solid, powder and liquid form. The bags/pouches of various sizes can be packed without changing any part. The change-over time from one size to another is virtually negligible. A range of films e.g. LDPE, PP, HMHD and laminations of different kind can be used for packing. The packing speed of the machine is up to 1,000 packs per hour depending upon nature of product, packing film and filling quantity.

For more details write to: Bhargava Industries, 92 Marol Co-op
Industrial Estate, Mathurdas Vasanji Road, Andheri (East),
Bombay 400 059.

(*Chemical Products Finder* 7(3), 1988, 71)

287 Vertical impulse sealer

Sinecos offers a vertical impulse sealer for sealing of thermoplastic films and laminates. Available with a sealing length of 225 mm, the sealer is suitable mainly for packing of liquids and pastes e.g. soft drinks, fruit juices, oil, ghee, etc. The machine consumes very little power, as the heating takes place only when the sealing is done and cuts off automatically once the sealing is over. It provides a neat, 3 mm wide, leak-proof seal. The foot operated sealer has a built-in-chute on the machine top, which conveys the packed pouches straight into the bin located at the rear of the machine. It features quick-changing, spring-loaded heating element; built-in switch with plug and fuse for the mains supply; and separate indicating lights for heating and cooling time. At the end of the sealing cycle, a buzzer indicates the completion of sealing. The total electronic control is on a plug-in type PCB for quick and easy maintenance.

For more details write to: Sinecos, 134 DDA, Industrial Estate,
Okhla Phase-I, New Delhi 110 020.

(*Chemical Products Finder*, 7(3), 1988, 84)

288 Tray dryer/chilling plant

Grovers tray dryer - available in 12, 24, 48, 96 and 192 tray models - is used for drying pharmaceuticals, chemicals, dyestuff, food products, etc. The dryer can be heated electrically or by passing steam/thermic fluid. The dryer is made in MS, painted outside with MS, SS, fibre-glass or aluminium inside. Also offered is a tunnel type tray dryer in capacities of 96, 144, 192 and 240 trays.

In these dryers, the trollyes are rolled into the dryer one behind the other. Grovers also manufactures brine/water chilling plants in capacities of 1 tonne to 50 tonnes of refrigeration. The chilling plants are compact, easy to operate and trouble-free. These are use by pharmaceutical, chemical and dyestuff manufacturers; plastic and food processing units; paper converters; etc.

For more details write to: Grovers Pvt Ltd, 228, Kaliandas Udyog Bhavan, Bombay 400 025.
(Chemical Products Finder 7(3), 1988, 110)

289 Chocolate moulding filler

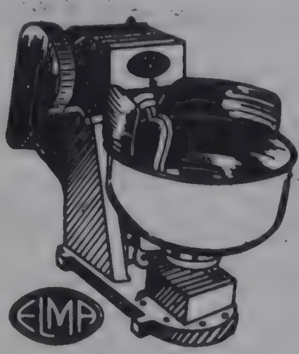
Depositing caramel and other soft centres into chocolate mouldings has been made easier by a machine from Britain. Using conventional equipment, three to five separate operations are involved each requiring complex and costly machinery. The new one-shot depositor from Lamdec, performs the functions of several machines (saving space and energy), and is fully programmable (producing different products easily and quickly). It also offers very low product wastage and greater hygiene. The system employs concentric nozzles, the outer depositing the chocolate while the inner simultaneously deposits the filling. High precision computer control ensures improved product consistency. The system can be tailored to suit a wide variety of production requirements and is readily adaptable for all moulding plants.

For more details write to: Lamdec, The Torrs, Torrs Close, Redditch, Worcestershire B97 4JR, U.K.
(Chemical Products Finder 7(3), 1988, 96)

290 Dough kneading machine

"ELMA" offers a rigid type of Dough Kneading Machine suitable for Bakeries, Hotels, Canteens, Restaurants and Hostels. A very compact design to do a heavy job. Capacity: 10 Kgs to 60 kgs.

Kneading Pan made of 16 guage Stainless Steel Sheets. Fitted with Heavy Duty Standard Best quality motors. Totally enclosed type gear system with pulley drive.



For further details contact: ELMA Industries, A/15, Aaram Society, Vakola, Santacruz (E), Bombay·400 055.
(Industrial Market Bulletin 2(10), 1988, 20)

291 Double arm kneading mixer

Mech Tech has introduced a heavy duty mixer. It consists of two counter rotating blades driven by spur gears. The blades rotate in a rectangular trough contoured at the bottom to form two longitudinal partial cylinders and a saddle section. Mixing action along with shredding, shearing, folding, dividing, re-compounding and smearing is carried out by a variety of blade types and shapes specially designed for the purpose. The blades are pitched so as to achieve end to end circulation. The clearances between the mixer body and blades are low as 5 mm. The blade arrangement can be tangential or overlapping. Tangential blades are run at different speeds with the advantage of faster mixing due to the constant change of relative blade position. The overlapping type avoid buildup of sticky material on the blades. The most widely used double arm mixer is the Sigma Mixer. This can be used for mixing liquids, solids or a combination of both

Modification of blade's face design can increase effects such as shredding or wiping. The good mixing is due to the shearing action of the blades. Mech Tech's double arm mixer finds applications in process industries for mixing materials of different viscosities such as dough, other food and allied products.

For further information write to: Mech Tech, PB No. 9019, Goregaon East, Bombay 400 063.
(Industrial Products Finder 16(11), 1988, 35)

292 Beer pump

A magnetically coupled beer pump, claimed to be the first of its kind for beverage dispensing, is offered by a British manufacturer Maggy (magnetically coupled) from Totton Pumps, is said to be leak proof as it eliminates the normal shaft seals which would wear down and eventually leak. It is, therefore, almost maintenance free. The magnetic drive also allows the pump to be made of taint-free plastics so it is ideal for the food trade, dispensing liquids, especially beer and lagers. It also features a constant delivery of between 0 and 9.1 litre/min with only a slight fall-off at 13.6 litre/min. Compactness is another advantage, with overall dimensions at 187 x 165 x 296 mm. The motor is a permanent split-capacitor induction type, with integral sealed gear drive, and the power source can be either 240 or 110 V single-phase 50/60 Hz.

For further information write to: Totton Pumps Ltd, Southampton Road, Cadnam, Southampton SO4 2NF, U.K.
(Industrial Products Finder 16(11), 1988, 223)

293 Plastic squeeze tubes

Indo-Dilmun Plastic Industries Pvt Ltd manufactures Thermoplastic Squeeze Tubes. Made of single layer thermoplastics, they are similar in construction to metal collapsible tubes but can retain their shape throughout the life of the products being dispensed. These are handy dispensers, inert and crack free packagings, having an important feature of suckback which keeps the products from oozing out after application. The merits of these tubes are: their fine style and beautiful printing aid the value of products; with soft quality and durability, they are convenient for packages and transportation; with various specifications, they are available in capacities from 10 to 350 ml, they cost less than other types of tubes; devoid of damages and breakages these tubes are safe and convenient to use. The unit is promoted by a team of non-resident Indians with long stints of experience in various fields. The plant is equipped with specially imported, sophisticated, automatic machinery like press blower (injection-blow moulding machine) and high speed tube decorator. The press blower can process almost all blowable thermoplastics other than PVC, most of which are generally compatible with a number of product formulations, compositions and ingredients. Applications of plastic squeeze tube as a packaging medium are in a host of industries including food stuffs, chemicals, detergents, gums and adhesives.

For more details write to: Indo-Dilmun Plastic Industries Pvt Ltd, Annaram, Jinnaram Mandal, Medak Dist. Andhra Pradesh.
(Chemical Products Finder 7(5), 1988, 8)

294 Filter products for food and beverage industry

Ion exchange (India) Limited offers a wide range of filter products specifically suited for food and beverage industry. They represent Cuno Pacific Pty Ltd. Australia in India for the fine filtration products. Cuno manufactures the widest range of fine filtration equipment available from any one company. The basic filtration methods used by them include: depth, surface and adsorption filtration. Generally the food and beverage industry requires utilisation of all these three methods. Many beverages just require the efficient filtration of particulates from water. Cuno depth filters, BetaPure, Micro Klean III and Micro Wynd II economically service this requirement for the mains incoming water to the manufacturing plant or individual drink dispensing units and ice makers. Should high flow rates be required then the polypropylene pleated BetaFine or Polypro should be used. The Cuno activated carbon cartridges AP117 are used to remove chlorine or offensive tastes and odours from water. In the beverage industry Zeta Plus serves as a replacement to the hazardous asbestos filter media. The filter media is available to fit all filter presses and is also manufactured in cartridge configuration to fit Cuno fully enclosed, no mess sanitary housings. Cuno's Zetapor Nylon 66 beverage membranes are specifically designed to meet the requirements of the beverage industry. The cartridge combines long service life with efficient bacteria, mould and yeast removal. Cuno filter media is steam or hot water sterilisable for many cycles to obtain maximum service life.

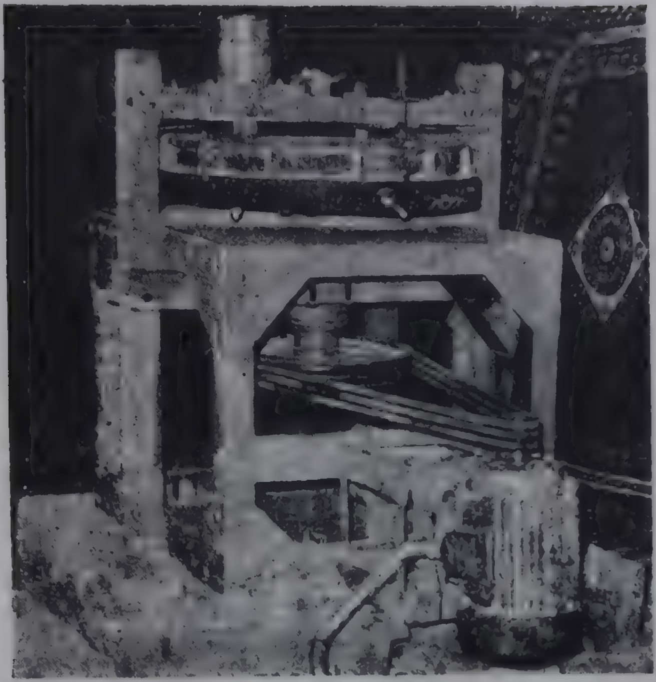
For more details write to: Ion Exchange (India) Ltd, 10 Bengal Chemical Compound 502, Veer Savarkar Marg, Prabhadevi, Bombay 400025. *(Chemical Products Finder 7(3), 1988, 90)*

295 Improved 'poha'/chirawa making machine is more efficient

An improved design of poha or chirawa making machine results in higher production and lesser requirements of space, power and maintenance. The conventional poha making machine consists of a machine frame with a central shaft placed between bush bearings and driven by a line shaft. Due to sudden jerk or impact on the machine, while feeding hot paddy (2 to 3 kg at a time) for making poha, the shaft often breaks at two places either from the neck where the flywheel is fitted or from bottom where it is supported by thrust bush bearing housing. The production remains stalled till the new shaft is fitted.

The conventional machine requires at least 15 x 10 ft space for its line shaft, electric motor, 3 stands, 3 bearing pedestrals, 3 bearings, two extra pulleys and two extra flat belts. The husk which comes out of the screen falls on the bottom causing excess wearing of bush bearings and jamming of the shaft in the bush bearings. This leads to excess load on the electric motor. The machine also vibrates violently while feeding paddy causing wear to the frame.

The new machine requires only 5 x 8 ft space and does not need a line shaft because its 7.5 hp electric motor is attached to its frame with a belt tensioning device and is run by a V-belt.



This results in less friction loss and full power utilization. Its shaft is very small and is fitted with two heavy duty ball bearings, all enclosed in a dust free housing. The life of bearings is more than double than that in conventional machine. Its frame is sturdy and vibration free. The cost factor is also considerably lower because it requires comparatively lesser number of parts and is run by a low horse power motor.

The new machine increases production by 10% and results in a saving of 75% in space, 25% in power and 75% in maintenance.

The improved poha making machine is developed by Shri Harman Seraffin of Spark Electric Works, Gondia 441601, Maharashtra. (*Invention Intelligence July 1988, 153-154*)

296 Flaking machine for cereals and pulses

The flaking of grain reduces the thickness and increases the surface area. These two characteristics combine to improve the water-absorption capacity and cooking quality. Flaking of rice and corn is common practice in the preparation of breakfast snacks. Though the process of flaking is very simple, expensive, high-capacity machines currently used for flaking the cereals. Therefore, there is a great need to develop a low-cost machine which could be used at the village level to prepare flakes from cereals and pulses. Such a machine has been developed at the Central Institute of Agricultural Engineering in Bhopal.

The machine, consists of a hopper, hollow rollers, gear transmission system and support frame. The hopper is made of galvanized iron sheet and has a plate-type regulator to allow the material to pass through rollers in single thin layer. A cam arrangement transmits an oscilating movement to the hopper for uniform feeding. There are three hollow rollers of 23 cm length made of mild-steel pipe. Two of them have diameters of 11.25 cm while the third one is 8.8 cm in diameter. They have ridges to get a better grip, and so have more of a stretching effect on grain. The surfaces of the rollers are nickel-plated as they are used for food processing. A chain of gears is provided to drive the rollers different speeds in opposite directions. The first set of rollers has the speed of 100 and 200 rpm, and the second set has 200 and 400 rpm. The power is supplied by a 1 hp electric motor through a belt drive to the central roller which has a speed of 200 rpm. The entire structure including rollers, gears, hopper and motor, stands on two mild steel plates of 8 mm thickness. The machine is portable and requires no foundation.

The machine is very simple in design and can be fabricated in any moderately equipped workshop. The cost of the machine is about Rs.4,000 (or US $ 335).

When using the flaking machine for rice, the paddy is cleaned and soaked in cold water for 48 hours. Prior to soaking, Paddy is washed thoroughly to remove any adhering dirt and dust. The water used for soaking is changed every 24 hours to avoid an odd flavour in the soaked paddy. After soaking, the water is drained and wet paddy is roasted for about five minutes or until a few grains are puffed into the roaster. The hot paddy is then passed twice through the flaking machine. During pressing, the husk is separated from the kernel which is then flattened and elongated by the pressure of the rollers and differential speed of their knurled surfaces.

The process details for making soy flakes is also given. The flaking machine has a capacity of 20 kg per hour. In the machine 70 per cent good quality flakes and 30 per cent grits are obtained.

The capacity was found to be about eight to 10 kg per hour. The quality of the flakes was discovered to be really very good with recovery of 70 per cent flakes. Soya flakes also could be prepared.

The machine was also tested using animal power, for use in villages without electricity. The speed of the animal driven system was 60 rpm and by belt-pulley connection 200 rpm was achieved at the central roller. The capacity of the machine remained the same as when it was driven by the 1 hp electric motor without straining the animal at all.
(*Appropriate Technology 14(4) 1988, 6-7*)

297 Mill for decorticating sunflower seeds

A handmade disc mill for decorticating sunflower seed has been developed. Parts are made up of wood, metal can be used to make the frame.

It is suitable for removing the husk from the larger, low-oil-bearing on confectionery sunflower seeds. It will lead a high proportion of kernels. It possesses 7 kg seed per hour. It is easier to operate with two persons.

This decorticator consists of three distinct components: a disc mill; a feed hopper and a mounting frame. The mill consists of two cast iron discs, one rotating, one static, with grooves cut into their faces. Seed is fed from a hopper through a hole in the centre of the static disc and the gap between both discs can be adjusted to take different sizes of seeds. When the rotation disc revolves at 150 revolutions per minute the seed is turned in the grooves and decorticated by the shearing effect of their edges. Further information is available with Tropical Products Institute, London.
(*Documentation Bulletin No.72, 1988, 35-37*)

298 Seed extraction machine developed

An axian-flow seed extraction machine for extracting seeds from vegetable fruits such as tomato, brinjals, chillies, cucumber and water melon has been developed at the Punjab Agricultural University.

The machine works on the principle of "wet-seed extraction" and uses freshly harvested ripe vegetable fruits. It comprises of a frame feeding chute, primary chopping chamber, crushing chamber and a centrifugal pump. Vegetable fruits are cut into small pieces with blades in the primary chamber and crushed finely by means of blades again in the crushing chamber.

Conveying rakes are provided in two rows on the shaft which moves the pulp and waste material along the shaft length to eject the waste. Three pipes, one on either side and one on the top, cover the machine, sprays water under pressure from a small centrifugal pump.

The sprayed water washes out the seeds and a fraction of the finely crushed fruit material which passes through the openings of the concave screen provided at the crushing chamber and is expelled throug the speed outlet. The concave screen is easily detachable and can easily be refixed to suit seed sizes of different vegetables. The machine is operated with a two HP electric motor.

The machine can extract seeds at the rate of 5.49, 3.78, 9.42, 4.68, 3.60, 6.60 and 1.42 kg seeds per hour of brinjal, tomato, chillies, summersquash, watermelon, squashmelon, and cucumber respectively. The maximum seed loss to the extent of 5.86 per cent is in tomatoes, followed by 5 per cent in cucumber.

Over 20 such machines have already been sold in the country and two exported to Vietnam. According to experts, this machine is economical, faster, safe and hygienic for seed extraction from vegetable fruits in comparison to manual practices.

(Economic & Commercial News 18 (40), 1988, 12)

299 Coffee bean peeler

The machine which peels dried coffee beans has a huller shaft, sifter and blower assembly. Model-A can peel 5,000 to 6,500 kg coffee beans in 10-12 hours. It has two blowers and is driven by a 15-20 hp motor, diesel or electric, at 600-650 rpm. The plain type with no sifter costs US $ 1,446; the deluxe type with sifter costs US $ 1,587. Model-B can peel 4,000 kg in 10-12 hours. It has two blowers and is driven by 10-12 hp motor, diesel or electric at 800 - 850 rpm. The plain type with no sifter costs US $ 1,301; the deluxe model with sifter costs US $ 1,446.

For further information please contact: Nick L. Parpana, General Manager, Parpana Machinery Inc., 1440-46 Antonio Rivera St., Tondo, Manila, Philippines.
(*Invention Intelligence July 1988, 190-191*)

300 Powder sifter

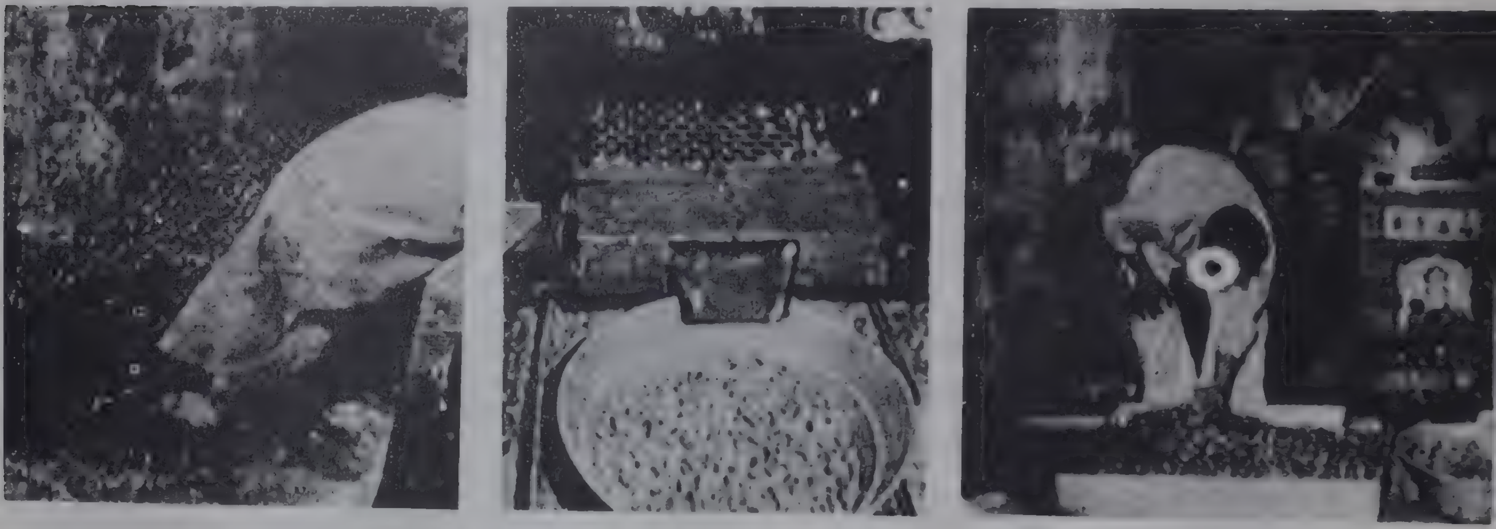
The Rota-Sift is a high capacity, versatile, compact and an economical centrifugal sifter used for the continuous separation of dry or moist materials, even those that tend to ball or agglomerate. It can effectively handle a wide variety of chemicals, pharmaceuticals, foods, dairy products and animal feed. Material is uniformly fed into the cylindrical sifting chamber by means of a feed screw which discharges the material into a rotating helical paddle. Centrifugal force accelerates the movement of the particles against the screen. The rotating paddles, which do not contact the screen, break up soft agglomerates and propel individual particles through the screen. Oversized particles, hand lumps and trash are ejected and pass directly to the discharge spout. The choice of separating media is wide, covering nylon, woven wire meshes and perforated screens. The Rota-Sift can be used for everything from scalping at very high capacity to retention of particles as small as 37 microns. Features include dust-free sanitary operation, quiet vibration-free action, quick screen change, easy cleanability, outboard bearings, large inspection door, and compact design with low power requirements.

For further information write to: Age Technologies Pvt Ltd., 712,GIDC, Makarpura, Vadodara, Gujarat 390 010.
(*Industrial Products Finder 16(12), 1988, 140*)

301 Almond decorticator

This thin shelled almond decorticator is ideally suited to decorticate THIN SHELLED ALMONDS of any size and can be fed continuously without pre-grading. The final product comes out in three sizes and the shell husk is aspirated and collected at the back of the unit. Developed by Tech-Know Consultants, India, the advantages are:

Insignificant damage to almond nuts
Complete separation of shell husk and almond nuts
Sturdy and rugged construction
Low cost post harvest technology.



This can cater to the requirements of rural industries in developing countries. It is successfully commercialised in India.

Following are the machine specifications

Output : 200 kg/hr input (i.e. 140 Kg/hr. almond nuts output)
Power : 2 HP single or 3-Phase
Manpower : Maximum - 2 persons
Size : 1x1x1.5m including drive unit
Unit market price : US $ 8,000
Fees for training : US $ 500

(*Asia Pacific Tech Monitor July-August 1988, 28*)

302 Machine to produce puffed grains

The machine, Model JP40-A, can produce 18-22 kg/hr of puffed grains like rice, corn and sorghum. It does not require steaming and baking. Operated by two people, the machine is powered by a 4 kw electric motor. The price, depending on production capacity, ranges from US $ 1,344 to 8,060/unit. Estimated investment needed to set up a complete production line to produce 2,000 to 4,000 units per year is US $ 2.7 million. Terms of cooperation can be either compensation trade or loan.

For more information contact: Fan Honggin, Yuling Machine Works, Jianshelu, Guxian County, Henan Province, China.
(*Invention Intelligence, July 1988, 191*)

303 Electronic colour sorters for sorting rice and cereals

Sortex Ltd, UK, manufactures electronic colour sorter for sorting rice and cereals. The 9400 range sorters, which are being introduced in India for the first time, are useful in sorting all types of rice, like white rice, parboiled rice, and Basmati rice, on the basis of colour. They can also handle wheat, oats, rye, and sesame seeds. The Sortex 9400 series has up to 160 eyes and sees, because of careful chute design, every grain individually even at very high capacities. A 40-channel machine can handle 3 to 4 tonnes of white long grain rice, 2.7 to 3.5 tonnes of parboiled rice or 12+tonnes of Japanese white rice every hour. The machine allows easy change over from one product to another. The 9400 is a very low power consumption machine using switch mode power supplies. The machine dimensions are: 1,995 (H) x 1,255 (W) x 1,380 mm (maximum depth). The weight is 640 kg.

For further information write to: Maharashtra Hybrid Seeds Co Ltd, Roopa Complex, Office No 6, 1st floor, 3rd Main Road, Chamarajpet, Bangalore, Karnataka 560 018.
(*Industrial Products Finder 16(12), 1988, 20*)

304 Multi-shaft high viscosity mixers

Age Technologies Pvt Ltd has introduced a range of vertical multi-shaft mixers and dispersers for compounding products as thin as water as heavy as the thickest adhesive. Heavy duty mixers, in capacities ranging from 50 to 2,000 litres, disperse and process pastes for too heavy for standard single shaft machines. These multi-shaft machines handles products having viscosities in excess of 300,000 centipoises, with increased efficiency and speed. The mixing tubs may be jacketed for heating/cooling and may be operated under vacuum. Available in the range are also mixers having scrapers to keep the sides of the tubs cle and increase heat transfer efficiency. Many variations of blades are available to emulsify, give an extra fine dispersion, mix heavy paste or cut rubber. Applications for these mixers include foods also. Different viscosities and batch sizes or special problems can be handle

For further information write to: Age Technologies Pvt Ltd., 712 GIDC, Makarpura, Vadodara, Gujarat 390 010.
(Industrial Products Finder 16(12), 1988, 145)

305 Hot and cold beverage dispensers

Jet Spray Corporation offers a complete line of visual cold beverage dispensers, post-mix beverage dispensers, fresh juice dispensers as well as hot chocolate and hot coffee dispensers.

For further information write to: Jet Spray Corporation, 825 University Ave, Norwood, MA 02062, USA.
(Industrial Products Finder 16(12), 1988, 131)

306 Agro-waste fuelled root crop dryer

The Philippine Root Crops Research and Training Centre of the Visayas State College of Agriculture in the Philippines developed a root crop dryer which utilizes agro-waste as fuel. The dryer basically consists of the furnace chamber which also serve as the primary heat exchanger, the drying chamber and the secondary heat exchanger. The product being dried does not come in contact with the smoke or products of fuel combustion. Heat needed for drying is supplied by the combustion of fuel in the burning chamber below the trays in the drying chamber. A clearance of 25 cm between the upper surface of the heat exchanger and the bottom trays is provided to avoid damage to the product being dried. During the drying process, ambient air is heated to an average temperature of 60°C on contact with the outer surface of the drum (primary heat exchanger) and move up by natural convection. The secondary heat exchanger, consisting of rectangular ducts connected to the primary heat exchanger, is mounted above the dry chamber. It heats up the moisture-laden air from the drying chamber to prevent condensation and to facilitate its exit through the chimney One batch of 100 kg fresh root crop chips can be dried on trays within 7-8 hr requiring 50-60 kg of coconut husk or fuel.

For further information write to: Tabianan R.C., Philippine Root Crops Research and Training Centre, Visayas State College of Agriculture Baybay, Leyte, Philippines.

(*Documentation Bulletin No.72, 1988, 15*)

PACKAGING

307 Aseptic packaging from Amrit Soya

AMRIT Soya and Proteins Foods Ltd is planning to go in for aseptic packaging systems developed by Prepac of France. Prepac has successfully innovated a flexible aseptic packaging systems, which produce flexible aseptic pouches in different sizes from 200 ml to 1,500 ml. The company plans to launch soya milk in these pouches.

At present, aseptic packaging is used for liquid foods like UHT milk, flavoured milk, soya milk, fruit beverages, fruit pulps, coconut water, ice, tea, condensed milk etc to achieve higher shelf life without refrigeration.

(*Chemical Products Finder 7(3), 1988, 119*)

323 Notification on mutton exports

The export of mutton will be allowed subject to a minimum export price (MEP) of Rs. 26 per kg FOB, says a public notice by the chief controller of imports and exports.

(The Economic Times 20 November 1988, 8)

324 Molasses export

The Tamil Nadu Government will be issuing release orders to sugar mills next week for export of molasses.

Four lakh tonnes of molasses will be exported by the sugar industry, in the country and the first shipment from Tamil Nadu is scheduled to be made from Mangalore port sometime later this month.

Tamil Nadu's share in the industry's export commitment is 50,000 tonnes of molasses.

(Financial Express 10 September 1988, 1)

325 Molasses export by private parties allowed

The Government has decided to permit private parties to export molasses on registration of contract with the State Trading Corporation (STC), according to an official release

However, molasses will continue to be canalised through STC, the release said.

Export of molasses will be permitted against export slips to be issued by STC subject to the condition that ratio of molasses exported from non-coastal states origin and coastal states origin is in the ratio of two-to-one.

(Economic and Commercial News 18(44), 1988, 13)

326 CCS for alcohol export announced

The Government has extended Cash Compensatory Support (CCS) for the export of alcohol.

It has also decided to grant additional CCS of five per cent on the export of High Density Poly Ethylene (HDPE) woven sacks.

309 IPCL to give plastic crates

The department of chemicals and petrochemicals plans to introduce 20,000 plastic crates in Himachal Pradesh and 2,000 in Jammu and Kashmir during the current apple season, reports UNI.

Next year another 20,000 crates will be given. A target of one million crates has been set for the 1990 apple season according to official sources.

The Indian Petrochemical Corporation Limited (IPCL) will offer the 22,000 crates free of charge to Himachal Pradesh and Jammu and Kashmir during the current apple season.
(*The Economic Times 27 September 1988, 3*)

310 New controlled atmosphere pack

"Walkivent" is a package based on a new principal for CAP. Rather than introducing a mixture of gas into the pack, CO_2 is produced by pellets inserted into the pouch by specialized equipment. Drawing a vacuum and sealing the package is done in the usual manner and the pellet-filled packages are immediately placed in cartons for further transport.

Ten minutes after insertion, the CO_2 pellet begins to gasify producing a 100 per cent CO_2 atmosphere, causing the package to swell. Any excess pressure is released through a special valve which is part of the package. After about two hours, pressure equalizes and the package has the appearance of a conventional vacuum-packed pouch. External air pressure closes off the valve, retaining the CO_2 and stopping any ingress of air. Employing this new system permits the Walkivent to provide longer shelf life than that obtained from conventional MAP Systems.

For further information write to: Iris Holmstrom, United Paper Mills Ltd., Walki Pak, POB 70, SF-37601 Valkeakoski, Finland.
(*Food in Canada June 1988, 11*)

311 Retention of boxed juice flavour

Researchers at the University of Florida's Institute of Food and Agricultural Sciences (IFAS) can be counted upon to make life interesti for the food processing industry. Their latest ploy is a method to make boxed juices taste better. The process they developed employs a method used to coat computer microchips. It reduces flavour loss cause by the package.

"The flavour of a juice is readily absorbed by current polymeric packaging materials, lowering the quality of juice by flattening the taste," said Marty Marshall, an IFAS scientist.

Polyethylene and polypropylene are frequently used in the construction of soft-pack containers. Fruit drink industries abandoned glass for the modern materials because they are less expensive, produce a drink that is aseptically sealed and stores without refrigeration, Marshall said.

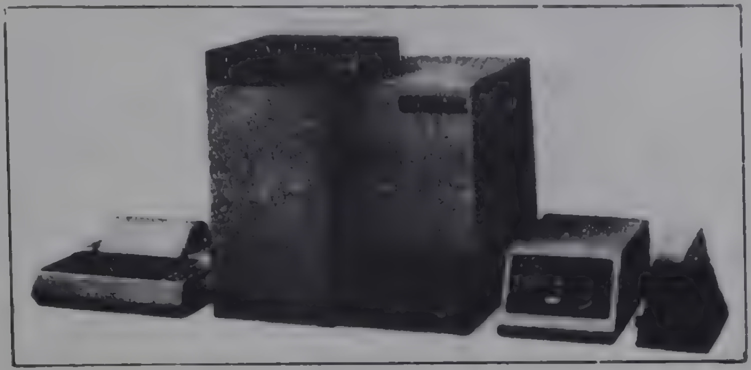
Unfortunately as with everything good there can be drawbacks. Experiments show that up to 70 per cent of fruit drink flavour is absorbed by the modern hydrocarbon-based polymers. In contrast, juice stored in glass containers remain unchanged. The ideal juice package combines the stability of glass with economic and storage benefits of soft packs, Marshall states. And this concept is now a reality, brought about by coating the insides of the plastic containers with silica.

(*Food in Canada June 1988, 11*)

ANALYSIS

312 Nitrogen/protein analyser

Perkin-Elmer International Inc, USA, has introduced a fully automatic nitrogen/protein analyser (Model 2410) to analyse total nitrogen/protein in wide variety of samples which is accomplished in approximately 3.5 minutes. The design principle is such that the sample is first combusted in a controlled atmosphere, after which the nitrogen is selectively separated and passed through a detector system for measurement and quantification. The system is capable of detecting component as low as 1 microgram and up to 10 mg in a given sample.



This analyser is fully microprocessor controlled having built-in auto-sampler for multi-sample analysis and service diagnostics for electronic/pneumatic failure. In addition it is capable of using He/Ar as carrier gas. The nitrogen and protein contents are directly digitally displayed obviating the need for a calculator or a computer. The instrument has wide applications in the field of food, animal feed, fertiliser, agriculture, dairy, fuel oils, paper, ocean, sediments, urea, polymer industries.

For more details write to: Labindia Instruments Pvt Ltd,
201 Nand Chambers, LBS Marg, Near Vandana Cinema.Thane,
Maharashtra 400 602

(Chemical Products Finder 7(3), 1988, 91)

COMMERCIAL INTELLIGENCE

PRODUCTION (Industrial)

313 Production and demand of alcohol

(Million litres)

	Production	Demand
1984-85	594	750
1985-86	580	800
1986-87	700	560

(Financial Express 23 September 1988, 9)

314 Alcohol production and capacity

	Distillation capacity (million litres)	Production (million litres) 1985-86	Capacity Utilisation (per cent)
Andhra Pradesh	79.17	46.97	59.3
Assam	1.60	0.31	19.4
Bihar	41.21	17.53	42.5
Gujarat	76.70	27.39	35.7
Haryana	18.75	17.29	92.2
Karnataka	139.61	40.15	28.8
Kerala	7.15	5.56	77.8
Madhya Pradesh	24.32	14.24	58.6
Maharashtra	321.86	154.76	48.1
Orissa	9.77	1.94	19.9
Punjab	30.30	14.57	48.1
Rajasthan	10.30	11.61	112.7
Tamil Nadu	96.93	76.84	79.3
Uttar Pradesh	370.57	143.30	38.7
West Bengal	11.10	2.50	22.5
Other States	12.78	2.59	20.3
Union Territories	2.00	2.55	127.5
All India	1254.12	580.10	46.3

(Financial Express 23 September 1988. 9)

315 Production of solvent extracted oils

(Quantity in M.T.)

Name of the oil	1985-86	1986-87	1987-88 (upto March)
1	2	3	4
Groundnut	20,738	33,692	12,646
Cottonseed	7,712	8,557	4,569
Ricebran	2,02,504	2,79,451	1,26,146
Soyabean	1,38,528	1,00,007	54,028
Salseed	8,123	10,447	2,332
Sunflower	12,745	22,052	17,457
Safflower/Kardi	3,748	2,515	991
Coconut	3,453	4,368	1,310

Contd...

1	2	3	4
Sesame/Till	1,091	1,534	676
Nigerseed	660	426	254
Linseed	413	254	-
Castor	1,568	1,700	988
Neem	5,796	9,286	4,163
Mahua	4,448	6,097	2,096
Mango kernel	1,057	1,012	2
Rapeseed/Mustard	22,772	32,911	3,126
Others	2,276	4,601	4,035
Grand Total	4,37,632	5,18,910	2,34,819

Data pertains to the oil years (November-October)

(The Economic Times 2 July 1988, 6)

EXPORT

316 Machinery imports for meat processing

A working group of the Agricultural and Processed Food Products Export Development Authority (APEDA) has recommended establishment of export-oriented modern abattoirs and duty-free import of machinery to increase the export earnings from meat and its products.

The international demand for meat and its products is rising. India is in a position to meet the growing demand but is not able to do so because of insufficient modern abattoirs, the group has pointed out.

In 1987-88, the export of meat and its products spurted to Rs. 194 crores from Rs. 75 crores in 1986-87 and Rs. 76 crores in the previous year.

The group has recommended that the Union government should intervene effectively and persuade state governments, particularly Uttar Pradesh, Andhra, Maharashtra, Punjab and West Bengal, to secure the support of local authorities for starting modern abattoirs to increase production capability.

Another important suggestion given by the group relates to countering of adverse publicity and propaganda about prevalence of diseases in Indian animals in foreign markets. In this context, it has recommended declaration of disease free zones and then establishment made known widely abroad.

Moreover, it has suggested liberal imports of machinery and equipment by recognised exporters over the next two to three years on a duty-free basis and thereafter on concessional duty to enable the industry to undertake technological upgradation necessary for holding its own among the competitors abroad.
(The Economic Times 6 October 1988, 4)

317 Export market for Indian spices

Indian spices have good export market in Korea, Australia and Singapore.

This was revealed in a market survey for cardamom and other spices in the three countries conducted by the Spices Board with technical assistance from the International Trade Centre (ITC), Geneva, according to a spokesman of Spices Board of India here.

The survey revealed that consumption of spices and spice products in Korea, Australia and Singapore showed a continued growth. While the market for cardamom was small, new products from cardamom oil and oleoresins had potential in food processing industries, particularly in Australia.

As regards Indian pepper, there was good scope for extending the market share. There was scope for export of chillies to Korea, but the survey notes that the consignments should meet the market specifications.

The survey also revealed the ability of importers, especially those based in Singapore, who obtain supplies from all sources at competitive prices and after reconditioning, re-export these to other countries. It has been pointed out that the consignments exported from the country should be subject to stringent application of phytosanitary regulations to meet the health requirement of these countries the spokesman said.
(The Economic Times 5 October 1988, 3)

318 Powdered spice exemption of cess

In a bid to boost the export of value-added items, the Government has exempted from cess spices in powder form in consumer packs of weight not exceeding one kg.

The government has also exempted dehydrated green pepper, frozen green pepper and large cardamoms from the levy of cess with immediate effect, according to a notification issued by the commerce ministry.

At present, cess is levied at varied rates on exports of spices from India.

(*Beverage & Food World* 15(3), 1988, 48)

319 Cardamom godown in Gulf planned

The Centre is exploring the possibility of setting up a godown in one of the Gulf countries to stock cardamom.

This was disclosed by the Union Commerce Minister, Mr. Dinesh Singh, in a communication to the Kerala Chief Minister, Mr.E.K.Nayanar.

(*Financial Express* 25 October 1988, 1)

320 Black pepper exports rise

The export of black pepper has increased during the last three years, the Minister of State for Commerce, Mr. P.R. Das Munshi informed the Lok Sabha on Friday.

The export rose from 37,620 tonnes worth Rs. 172.48 crores in 1985-86 to 41,011 tonnes worth Rs. 240.58 crores in 1987-88, the Minister said in a written reply.

Kerala accounted for 97 per cent of the export of pepper, the Minister said.

However, the export of cardamom dropped considerably during the last three years, the Minister told Prof. P.J. Kurien. Cardamom exports of 3,270 tonnes worth Rs. 53.45 crores in 1985-86 declined to 270 tonnes worth Rs. 3.40 crores in 1987-88, the Minister said.

Clarification on EPZ, The Commerce Minister, Mr. Dinesh Singh clarified a remark made by the Minister of State, Mr. Das Munshi that export processing zones (EPZs) had "not given adequate returns for various reasons".

Mr. Das Munshi said this in reply to a question by Mr. S.B. Rao and supplementaries to it on setting up of an EPZ at Visakhapatnam even while assuring the members that location of an EPZ there had been agreed to in principle and would be taken up in due course.

Mr. Dinesh Singh intervened to say that EPZs had indeed been successful. Only, he added, the older ones had done well, but the new ones are having some problems.

(Financial Express 20 August 1988, 4)

321 IQF units to boost seafood exports

Seafood exports from the country is expected to increase considerably with the setting up of individually quick frozen (IQF) plants

Several exporters with active assistance from the Marine Products Export Development Authority (MPEDA) have set upto 11 plants fo the manufactures of IQF products, mainly shrimps. According to MPEDA more such plants are likely to come up in the near future.

During 1987-88, more than 2,000 tonnes of IQF products worth ove Rs. 21 crores were exported from India.

The MPEDA, in consultation with exporters and manufacturers of IQF, has evolved a strategy for the promotion of Indian IQF items in Erope, US and Japan.

(The Economic Times 29 September 1988, 7)

322 Export of frozen fish

Quantity in Tonnes
Value in Rs. Lakhs.

Country	Quantity 1986-87	Value
Singapore	5,567	734.93
Japan	2,699	691.06
Taiwan	2,578	320.17
Kuwait	789	197.97
Hongkong	376	59.71
Malaysia	255	48.29
U.A.E.	79	15.18
U.S.A.	152	35.85
Others	643	125.85
Total	13,138 Tonnes	2229.01 Lakhs

(Seafood Export Journal 20(7), 1988, 29)

308 Jute chests for apple and tea

Jute packaging for horticultural and plantation produce may take off in a big way soon. While the Indian Jute Industries' Research Association (Ijira) has achieved a breakthrough in developing cost-effective jute packaging, it is learnt that the Centre may extend 50 per cent subsidy for jute apple and tea chests.

With tea and apples alone expected to account for a potential market of 10 million and six million boxes valued at Rs. 50 crores and Rs. 13.2 crores per annum, respectively, the Ijira technology can provide a significant new outlet for jute mills and laminating units. One of the major advantages for mills is that jute boxes are high value added items yielding a profit of around 300 per cent.

Dr. S.R. Ranganathan, director, Ijira, explained that the product which is made from resin steamed, hot pressed conventional jute fabric, has already undergone several tests. While the country's largest tea concern has certified that the quality of the jute tea chests, the Tea Board is presently examining the product. About 25,000 jute apple chests will also be used this season in Himachal Pradesh, J and K and Uttar Pradesh for practically testing the Ijira product.

According to Dr. Ranganathan, jute packaging has unlimited potential as almost all kinds of horticultural produce can be packed in jute packs. The development assumes special importance as while the government has banned felling of trees, on the one hand, the price of imported timber is continuing to rise, on the other.

The development of jute tea and apple chest is one of the achievements of the $ 2,48 million UNDP sponsored programme for jute research, and development of diversified end uses of jute being undertaken by Ijira. The four-year programme. which started in 1987, has also been sanctioned Rs. 89.95 lakhs by the Union government.

(The Economic Times 3 September 1988, 3)

The alcohol exports will get CCS at the rate of 10 per cent of the Freight on Board value (FOB) while in the case of HDPE woven sacks, the CCS has been increased from five to 10 per cent. These rates will be applicable from September 21, according to a notification of the Commerce Ministry and will remain in force till March 31, 1989. From April 1989 new rates will be fixed by the Government for various export products keeping in view various factors.

Incidentally, the Government recently authorised the export of 500 kilolitres of alcohol which is expected to result in foreign exchange earnings to the tune of Rs. 120 million.

In the current year 20,000 tonnes of HDPE woven sacks are proposed to be exported.

(Economic and Commercial News 18(41), 1988, 6)

327 Non-basmati rice export norms

A special procedure has been formulated for export of non-basmati rice.

According to a public notice issued by the office of the Chief Controller of Imports and Exports said :

- The entire export of non-basmati rice would be placed at the disposal of the agricultural and processed food export development authority.
- Exports would be allowed on the basis of registration of contracts with the authority backed by cent per cent confirmed irrevocable letter of credit or against advance payment received in full, subject to production of bank certificate from nationalised scheduled bank in India covering hundred per cent f.o.b. value against the specific export order of against revolving letter of credit.
- As soon as the ceiling has been reached, the fact might be reported to the Ministry of Commerce by the authority.

(Economic and Commercial News 18(41), 1988, 8)

328 India's coffee export quota

India stands to gain a massive 27 per cent increase in its coffee export following the increase in the overall international quota by the International Coffee Organisation (ICO). The increase would be approximately 11,000 tonnes over last year.

Based on the final total availability figure of 56 million bags under ICD markets, India's share of the world coffee in terms of quantity would be around 8,59,939 bags of 60 kg each approximating 51,596 tonnes.

(Economic and Commercial News 18(44), 1988, 6)

329 Efforts for more fruits and vegetable exports

A working group of the Agricultural and Processed Foods Export Development Authority (APFEDA) has recommended the formulation of proper schemes in order to meet delivery schedules of fresh fruits and vegetables so as to increase their exports. Currently export earnings from fresh fruits and vegetables in 1987-88 was Rs. 930 million as compared to Rs. 1030 million in the previous financial year. This year the export target for fresh fruits and vegetables is in the region of Rs. 1250 million.

The working group has underlined the need to increase cargo space. economise the fair structure and improve the cargo handling.

While pointing out that important markets, such as the USA and Japan, rendered inaccessible plant quarantine laws, the working group has suggested the minimum installation of a few water heat treatment plants at quarantine and fumigation stations so that India could gain access to these very important markets.

According to the group, at present the data base is very weak and it should, therefore, be strengthened on a priority basis, particularly in respect of area and production, as well as of international demand and prices through international market surveys.

(Economic and Commercial News 18(43), 1988, 6)

330 Mangoes export

The Pakistan is successfully exploiting the export of potential of fresh mangoes while India's export earnings from the fruit are still negligible.

Pakistan's fresh mango exports have increased from about 1,000 tonnes in 1977-78 to more than 12,000 tonnes, stepping up export earnings from the fruit in a big way.

The main export markets for both India and Pakistan are the same - the UAE, Saudi Arabia, Kuwait, Bahrain and the UK.

Area under mango cultivation has also increased in Pakistan from 69,000 hectares in 1982-83 to 79,000 hectares in 1986-87, registering an increase of about three per cent per annum.

Production of mangoes has also increased from less than a millio tonnes in 1982-83 to about eighty million tonnes in 1986-87, showing an increase of about 2.5 per cent per year.

The Philippines and Mexico are at present the main suppliers to Japan. Alphonso mangoes are said to hold good scope for stepping up exports to Japan because of their distinctive taste, flavour and shape. Besides mangoes will have no domestic competition and several hotels and restaurants had already started serving tropical dishes.

However, Indian mangoes are at present banned for import in Japa as they do not satisfy the "plant quarantine law" of that country due to the presence of fruit flies.

The ban can be waived if India establishes a proper facility to disinfect the pests and the effectiveness of the method is certified by the Japanese authorities.

As per the Japanese regulations, the machine for vapour treatmen has to be installed in the country of origin depending upon its climatic conditions and under the supervision of Japanese experts.

Philippines and Mexico, the main suppliers to Japan, have already set up such vapour treatment plants.

About Rs. 216 crores in foreign exchange was earned by India through export of fruit and fruit products since 1985-86.

The Government is exploring new markets and incentives like cash compensatory scheme and import replenishment are being allowed.

India's exports of fruits and fruit products stood at 80,628 tonnes valued at Rs. 74.19 crores in 1985-86, 64,134 tonnes valued at Rs. 64.34 crores in 1986-87 and at 73,300 tonnes valued at Rs. 77.80 crores in 1987-88

The export of mangoes during April 1987-January 1988 was 14,900 tonnes as compared to 10,500 tonnes during 1986-87, showing thus an increase of around 4,400 tonnes within a period of ten months. Exports had, however, gone down in 1986-87 as compared to 16,460 tonnes exported in 1985-86.

(*Financial Express 6 October 1988, 2*)

331 Award for apple juice concentrate

The Himachal Pradesh Marketing and Processing Corporation has been awarded the prestigious 'International American award, 1988' for their best quality apple juice concentrate.

The corporation had exported 150 tonnes of apple juice concentrate to the United States last year, Mr. R.S. Rana, the corporation's managing director told newsmen.

(*The Economic Times 23 October 1988, 8*)

332 Sesame seeds export allowed under OGL

The Central Government has permitted the export of sesame seeds under open general licence number three, reports PTI.

The permission is however, subject to registration of export contracts with the Indian oil and produce exporters association (IOPEA), Bombay.

An IOPEA press release issued here today said the Chief Controller of imports and exports, New Delhi, has issued a public notice in this connection on November 1.

(*The Economic Times 6 November 1988, 1*)

333 Fenugreek exports

India is one of the major producers and exporters of Fenugreek. Some 30,000 to 40,000 hectares are planted with Fenugreek, yielding ab 20,000 metric tonnes. About 3,000 metric tonnes are exported, earning about Rs. 1.7 crores. Saudi Arabia, Japan, Sri Lanka, Korea, and the UK are some of the foreign buyers. Rajasthan and Gujarat are the leading growers of Fenugreek in India.

Fenugreek seeds have fixed oil content of about seven per cent and are a good source of protein.

(The Economic Times 10 November 1988, 4)

IMPORTS

334 Import of technology for capital equipment

The centre has drawn up a package of measures that will permit the food processing sector to import state-of-the-art technology for capital equipment and process technology, Mr.Tytler said.

The State Governments had been asked to form nodal agencies to ensure development of the food processing sector.

A project for setting up a pineapple juice concentrate plant at Silchar was under execution by the Modern Food Industries India Ltd It had also acquired land at Udaipur for setting up an energy food plant, the Minister said.

(Financial Express 18 November 1988, 4)

335 Cloves, Cinnamon off OGL

The Government on Wednesday effected a major change in the import policy by shifting cloves and cinnamon/cassia from open general licence category to permit licence.

According to official sources, this would greatly benefit the clove, cinnamon and cassia growers in Kerala.

An official release said that "cloves and cinnamon/cassia which were so far allowed for import by all persons under OGL for stock and sale purposes, will now be permitted for import only against

licences to be granted to all those who have imported these items during the current year on in any of the last five years. Actual users who have no past imports will also be eligible for licence".
(Deccan Herald 1 December 1988, 14)

336 Steep cuts for fast foods machinery

Four important packaging machinery for the fast foods and consumer products sector are now on the concessional duty list. A total duty of only 35 per cent is applicable on them under notification number 250 of 20, September. The machinery listed are: (1) Sretch blow moulding machine, (2) Multilayer coater/extruder machine, (3) Plastic and laminate collapsible tube making machine and (4) Aluminium collapsible tube making machine.

The machinery is mainly for making packaging material for perishable agricultural products. The concession is meant for new units such as the controversial Pepsi Cola project.

On analysing the implications on the basis of information in the Database, we find that 35 per cent rate of duty is the lowest rate applicable on machinery.

In the last two years, the government has tried to modernise the food packaging industry by extending the rate to select machinery in this sector. The strange part is that three of the four machines in the current notification in the 88-89 Budget. What is more, there is no end use condition now. Even packaging material for non essential items like toothpaste and pan masala, apart from Pepsi Cola products, can be manufactured. We also find that packaging machinery without any conditions on end use attract duties varying from 65 to 90 per cent.
(The Economic Times 21 October 1988, 10)

337 Almonds import liberalised

The Union government has liberalised the import policy for almonds. Apart from dry fruit licensees who will benefit from the Amendment in the policy, additional licences issued to export houses and trading houses after April 1, 1988, will also be valid for import of almonds up to five per cent of the licence value and within the overall value of the licence.

According to a public notice issued by the chief controller of imports and exports on July 27, each eligible dry fruit licensee will also be granted an additional licence for the import of almonds only for a value of Rs. 20,000 irrespective of the value of the dry fruit licence to which he is entitled. This is for stock and sale as provided for in chapter XIII of the import-export book (volume 1). The licence applied for will include both dry fruit and almonds. The Amendments have been made in the public interest, the public notice stated.
(The Economic Times 29 July 1988, 1)

338 Palm oil import from Indonesia

India and Indonesia have agreed to set a target for the export of 30,000 tonnes of palm oil annually to India by 1990.

The agreement was arrived at a recent India-Indonesia Joint Business Council (JBC) meeting between the Federation of Indian Chambers of Commerce and Industry (FICCI) and the Indonesian Chamber of Commerce and Industry (Kadin) held here on November 17 and 18.

Neutralised palm oil, used in India for the manufacture of vanaspati ghee, can be produced in Indonesia with the help of Indian knowhow. The excess capacity in the oil processing units in Indonesia would enable the production of neutralised oil to suit Indian requirements at a competitive price.
(Financial Express 22 November 1988, 12)

TRADE INFORMATION

339 Rice bran at control price

The Punjab Government has decided to give rice bran at controlled price. According to a spokesman of the food and civil supplies department, the Punjab Rice Bran Price Control Order is being re-promulgated.
(Poultry Guide 25(9), 1988,101)

340 Technology data bank

The Government is planning to set up a 'technological data bank' in consultation with the Directorate General of Technical Development (DGTD) for dissemination of requisite information to both private and public sector industries, according to the Union Minister of State for Industrial Development Mr. M. Arunachalam.

Wide ranging discussions to setting up the data bank have already been held with some of the European companies. The data bank would go a long way in absorbing various aspects of technological collaborations, he said.

(Financial Express 2 September 1988, 2)

341 Salt industry under priority sector

The Government has decided to include the salt industry under "priority sector" for financial assistance.

According to official sources, this is in response to the demand from the industry and is expected to give a further fillip to the industry which employs thousands of people in coastal areas and in Rajasthan and Madhya Pradesh.

The sources said the long pending demand of the salt industry for being included under the priority sector had been considered by the Government.

It was decided in consultation with the Reserve Bank of India to include the industry in the priority sector and availing concessional credit from the public sector banks as manufacture of salt is an industrial activity under the small scale sector.

The sources said the ambitious programme launched for iodisation of salt was so successful that now even large-scale units want to enter into salt production. However, the industry Ministry is confining it only to the small-scale sector as a matter of policy.

Salt is one of the commodities in which the country has achieved self sufficiency and the production of common salt increased from 1.7 million tonnes in 1987.

(Financial Express 19 September 1988, 1)

342 Licensing system for hatcheries

Poultry farmers in Karnataka can now heave a sigh of relief, with the State Government there bringing in hatching of eggs and day-old-chick production besides their supply and sale under licensing system.

This licensing system, which is notified in the recent Gazette of the Karnataka Government, which came into effect immediately, gives the licensing authority enormous powers including the right to seize breeding stock, hatching eggs and day-old chicks or books of accounts of hatcheries not conforming to the stipulations laid down by the Government.

The Gazette notification has made it clear that any person carrying on the business of production and sale of hatching eggs or day-old chick shall obtain a licence within three months from the publication of the Karnataka hatching eggs and day-old chick (regulation of production, supply and sale) Order, 1988. The date of Gazette notification is August 4, 1988.

As per the licensing system, hatcheries are also required to properly label the chick boxes giving details of date on which it was hatched, vaccinations injected and brand name of chicks. Besides, they will have to submit a monthly return of breeding stocks maintained, hatching eggs while chicks produced and sold. That apart, the licence which is renewable every year has to be displayed in the business premis

The order will have far reaching implications for the chick producers and buyers in Karnataka as it stipulates that broiler chicks sold should at least weigh 38 gm and white egg layer type chicks 32 gm. Besides, the chicks should be healthy, active and vigorous, free from diseases, deformities, nutritional disorders and deficiencies.
(*Financial Express 10 September 1988, 3*)

343 Coconut purchase centre at Madras

The Coconut Development Board in the Union ministry of agriculture will soon open a copra purchase centre in Madras for the benefit of the coconut growers of Tamil Nadu, reports PTI.

Stating this at a press, conference here on Wednesday, Mr. Bali Range Gowda, chairman of the Board, said two purchase centres were already functioning in Cochin and Bangalore.

The current production of copra in the country was 6,000 million nuts per annum and various programmes were being implemented to increase the production to meet the requirement by the end of the current Seventh Plan period which was estimated to be 10,000 million units, the chairman added.

(The Economic Times 27 May 1988, 3)

344 Chewing gum sales in Japan

A peak in the demand for conventional chewing gum has moved at least two Japanese companies to introduce novel gums in an effort to stimulate sales.

No time gum contains a substance that helps prevent tooth decay according to its manufacturer, Lotte Company. The gum swells to more than twice the size of conventional gums, enabling it to come in contact with more teeth. Lotte indicates that the larger size of the gum helps it to remove plaque that forms between teeth and on their surface.

Runaway success

After an extremely successful nationwide launch in August, Lotte has revised its projected sales of Notime from 24 million pieces a year to 48 million. And the Japan Economic Journal reports that revenues from the new product are expected to reach Y5 billion in annual sales.

Kanebo Ltd. has launched two gums, one in targeted at smokers, Gum After Smoking and one at those who drink alcoholic beverages, Gum After Drinking.

The smoker's gum is reported to contain essence of TK-Orion and propolis. Kanebo claims that TK-Orion will lower the density of nicotine in the blood. Propolis is said to be good for throat inflammation and digestive ailments. The drinker's gum contains the essences of ginseng, licorice and persimmon leaves.

(Food Engineering International March 1988, 13)

345 The fresh food bible of Britain

A country of the size of India, has not produced any natural guide for fresh food, thereby showing utter lack of diet and nutrition in our country. In contrast, Britain, a small country, has a national fresh food Bible called 'Prodfact 1988'. It is the most comprehensive guide to British agricultural and horticultural products and covers more than 80 different types of fresh produce.

Since the first edition in 1982 it has grown to 432 pages of information on nutritional values, cooking methods, storage, cultivation, statistics, historical detail and the best ways to buy fresh foods produced in Britain ranging from apples to yogurt. This latest edition contains three new sections on farmed venison, cider and wheat.

The list of further information sources has been subtantially increased with address and telephone numbers, plus named contacts, for many of the organization concerned with British Agriculture and Horticulture. Updated annually by the British Food Information Service of Food from Britain, Prodfact is invaluable to food writers, schools, universities and commercial organizations - in fact to any one intereste in and involved with British fresh food.

Some of the questions pertaining to modern kitchen, nutrition and food processing answered in the text are:

- Can you cook an egg in a microwave ? -- As the basic methods of cooking eggs can be used in a microwave but poached or fried eggs should have the yolks pricked first, to prevent explosion. Eggs should not be cooked in the shell unless a special microwave recipe is followed.
- What is the calories count for Cheddar Cheese ? -- The calorie content of a Cheddar type cheese is 410 per 100 gms.
- How do you tell a fresh Brussels sprout from a stale one ? -- A fresh Brussells sprout should have a clean white base and no sign of yellowing leaf.
- Is it possible to freeze apples ? -- Apples peeled, cored and sliced can be frozen after steeping in the juice of a lemon added to 70 ml (1.25 pints) of water for 15 min.

Prodfact-1988 is available from Food From Britain, Market Towers, New Convent Garden Market, London SW8 5N Price Ŀ 9.50 plus Ŀ 1.25 postage.
(*Chemical Weekly* 34(9), 1988, 81)

FOOD REGULATION, QUALITY CONTROL AND HYGIENE

346 Control limit for ethylene dibromide

The U.K. control limit for exposure to ethylene dibromide will be 0.5 ppm (8-hr time-weighted average), down from the present 1 ppm limit from 1 January 1989.
(*Chemistry and Industry* 18 July 1988, 439)

347 Limit for radionuclides in food

Radionuclides may appear in food due to releases from highly unprobable accidents in nuclear reactors. The traces of radioactive substances may make a small contribution to the radiation dose to members of the public. This is in addition to the dose contributed by natural radioactivity present in all food items.

Following Chernobyl accident, different countries have prescribed acceptable levels of radionuclides in food items.

In India, the Atomic Energy Regulatory Board (AERB) is responsible to carry out regulatory and safety functions pertaining to radiological safety in the country. A special meeting of experts from various ministries and organisations was organised by AERB on 27 August 1987 at Trombay to discuss the scientific basis for the permissible levels of radionuclides in food stuffs.

In stipulating the values of permissible levels of radionuclides in food items relevant recommendations of the International Commission on Radiological Protection (ICRP) on radiation doses to members of the public are considered. It is ensured that consumption of food items containing PLRF will expose the population to only a small fraction of the dose to members of the public recommended by ICRP. Also this contribution is very small compared to the variation in radiation dose to public inhabiting different parts of the country.

It was explained that the philosophy adopted has adequate margin of safety. Because of this, variation in the habit of food consumption of population in different states and regions need not be considered in the computation.

After detailed discussion, the permissible levels of radionuclides in food items, as indicated in the Table, were accepted for implementation.

Table: Permissible Levels of Radionuclides in Food

Food Items	Permissible Levels of Radionuclides in Food for normal situations	
	Cs-137	Sr-90
1. Milk (Bq/L)	30	10
a) Milk Powder (Bq/kg)	330	110
b) Butter (Bq/kg)	40	15
c) Butter Oil (Bq/kg)	40	15
2. All other food items (Bq/kg) (Meat, Cereals and vegetables)	40	15

Note: In the year of an accident (to be notified by Competent Authority) these levels can be 10 times more and in addition 1-131 conc. of 2000 Bq/L or Bq/kg will apply.

(World Science News No.36, 1988, 11)

348 Prevention of Food Adulteration Rules (Second Amendment) 1988

1. (1) These Rules may be called the Prevention of Food Adulteration (Second Amendment) Rules, 1988.

(2) They shall come into force immediately on the expiry of six months from the date of their publication in the Official Gazette.

2. In the Prevention of Food Adulteration Rules, 1955, (i) in rule 49, after sub-rule (16), the following sub-rules shall be inserted, namely:-

"(17) No person shall sell mineral oil (food grade) for use in confectionery except under Indian Standards Institution Certification Mark.

(18) No person shall sell confectionery weighing more than 500 gms, except in packed condition and confectionery sold in pieces shall be kept in glass or other suitable containers.

Explanation - For the purposes of sub-rules (17), and (18)" "Confectionery" shall mean sugar boiled confectionery, lozenges and chewing gum and pubble gum".

(ii) In Appendix 'B', item 25, -

(a) for item A, 25.01, the following item shall be substituted namely:-

"A25.01--Sugar boiled confectionery whether sold as hard as boiled sugar confectionery or pan goods confectionery or toffee or milk toffee or modified toffee or lecto-bon-bon or by any other name shall mean a processed composite food article made from sugar with or without doctoring agents such as cream of tartar, by process of boiling whether panned or not. It may contain centre filling, or otherwise, which may be in the form of liquid, semi-solid or solids with or without coating of sugar or chocolate or both. It may also contain any of the following:-

(i) sweetening agents such as sugar invert sugar, jaggery, lactose, gur, bura sugar, Khandsari, sorbitol, honey, liquid glucose;

(ii) milk and milk products;

(iii) edible molasses;

(iv) malt extracts;

(v) edible starches;

(vi) edible oils and facts;

(vii) edible common salt;

(viii) fruit and fruit products and nut and nut products;

(ix) tea extract, coffee extract, chocolate, cocoa;

(x) Vitamins and minerals;

(xi) Shellac (food grade) not exceeding 0.4 per cent by weight, bee wax (food grade), paraffin wax (food grade), carnauba wax (food grade), and other food grade wax or any combination thereof;

(xii) edible desicated coconut;

(xiii) spices and condiments and their extracts;

(xiv) candied peels;

(xv) enzymes;

(xvi) sodium bicorbonate;

(xvii) lubricants such as calcium, magnesium or sodium salts of stearic acid, talc (not exceeding 0.2 per cent), ioing sugar, or mineral oil (not exceeding 0.2 per cent by weight), stearic acid (food grade), glycerine (food grade);

(xviii) permitted anti-oxidants;

(xix) permitted colouring matter

(xx) permitted stabilizing and emulsifying agents;

(xxi) flavouring agents;

(xxii) acidulants, such as citric acid, tartaric acid,malic acid (food grade);

(xxiii) jellifying agent, such as gelating (food grade), agar-agar, soldium carboxymethyl cellulose;

(xxiv) permitted preservatives;

(xxv) edible foodgrains, edible seeds;

(xxvi) calcium bicarbonate, calcium carbonate;

(xxvii) baking powder;

(xxviii) gulkand, gulabanafsha, mulathi;

(xxix) puffed rice;

(xxx) china grass;

(xxxi) eucalyptus oil, camphor, menthol oil crystals, pepper mint oil;

(xxxii) thymol;
(xxxiii) edible oil seed flour and protein isolates;
(xxxiv) gum arabic and other edible gum.

It shall not contain artificial sweeteners.

Mineral oil (food grade) if used as a lubricant, shall not exceed 0.2 per cent by weight.

It shall also conform to the following standards, namely:-

(i) Ash sulphated (on salt free basis) - Not more than 2.5 per cent by weight.

Provided that in case of sugar boiled confectionery where spices are used as centre filling, the ash sulphated shall not be more than 3 per cent by weight.

(ii) Ash insoluble (in dilute Hydrochloric acid)-- Not more than 0.2 per cent by weight.

Provided that in case of sugar boiled confectionery where spices are used as centre filling, the ash insoluble in dilute Hydrochloric acid shall not be more than 0.4 per cent.

Where the sugar boiled confectionery is sold under the name of milk toffee, and butter toffee, it shall form to the following additional requirements as shown against each ;

(1) Milk toffee--
   (i) Total protein (NX6.25) shall not be less than 3 per cent by weight on dry basis;
   (ii) Fat content shall not be less than 4 per cent by weight on dry basis.

(2) Butter toffee - fat content shall not be less than 4 per cent by weight on dry basis.

It may contain sulphur dioxide in concentration not exceeding 350 parts per million;

(b) item A.25.02 shall be omitted.

(c) for item A.25.03, the following item shall be substituted namely:-

"A. 25.02 lozenges: Lozenges shall mean confections made mainly out of pulverised sugar, or icing sugar with binding materials such as edible gums, edible gelatine, liquid glucose or dextrin and generally made from cold mixing which does not require primary boiling or cooking of the ingredients. It may contain any of the following:-

(i) sweetening agents such as dextrose, dextrose-mononydrate, honey, invert sugar, sugar, jaggery, bura sugar, khandsari, sorbitol, liquid glucose;
(ii) milk and milk products;
(iii) nuts and nuts products;
(iv) malt syrup;
(v) edible starches;
(vi) edible common salt;
(vii) ginger powder or extracts;
(viii) cinnamon powder or extracts;
(ix) aniseed powder or extracts;
(x) caraway powder or extracts;
(xi) cardamom powder or extracts:
(xii) cocoa powder or extracts;
(xiii) protein isolates;
(xiv) coffee extracts or its flavour;
(xv) permitted flavouring agents;
(xvi) acidulants such as tartaric acid, malic acid and citric acid (food grade);
(xvii) permitted colouring matter;
(xviii) vitamins and minerals;
(xix) sodium bicarbonate
(xx) lubricants such as calcium, magnesium or sodium salts of stearic acid talc (not exceeding 0.2 per cent) icing sugar, mineral oil (food grade), stearic acid (food grade), glycerine (food grade),

It shall not contain artificial sweeteners.

Mineral oil (food grade), if used as lubricant, shall not exceed 0.2 per cent by weight.

It shall also conform to the following standards:

(i) Sucrose content - Not less than 85.0 per cent by weight,

(ii) Ash sulphated (Salt free basis) - Not more than 3.0 per cent by weight.

(iii) Ash insoluble in dilute Hydrochloric acid - Not more than 0.2 per cent by weight.

It may contain sulphur dioxide in concentration not exceeding 350 parts per million."

(The Gazette of India Part II - Section 3 - Subsection (i) No.184, 8 April 1988)

349 Prevention of Food Adulteration Rules (Third Amendment) 1988

1. (1) These rules may be called the Prevention of Food Adulteratic (Third Amendment) Rules, 1988.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Prevention of Food Adulteration Rules, 1955, in Appendix 'B':-

(i) in entry (e) of item A, 17.01, for the words and figures "Free fatty acids as oleic acid. Not more than 3.0 per cent", the words and figures "Acid value . Not more than 6.0" shall be substituted;

(ii) in entry (e) of item A.17.02, for the words and figures "Free fatty acids as oleic acid.. Not more. than 0.25 per cent", the words and figures "Acid value. Not more than 0.50" shall be substituted;

(iii) in entry (e) of item A. 17.03, for the words and figures "Free fatty acids as oleic acid. Not more than 3.0 per cent", the words and figures "Acid value. Not more than 6.0" shall be substituted;

(iv) in entry (e) of item A.17.04, for the words and figures "Free fatty acids as oleic acid. Not more than 2.0 per cent", the words and figures "Acid value.. Not more than 4.0" shall be substituted.

(v) in entry (e) of item A.17.05 for the words and figures "Free fatty acids as oleic acid. Not more than 0.25 per cent", the words and figures "Acid value. Not more than 0.50" shall be substituted;

(vi) in entry (e) of item A.17.06, for the words and figures "Free fatty acids as oleic acid.. Not more than 3.0 per cent", the words and figures "Acid value. Not more than 6.0 shall be substituted;

(vii) in entry (e) of item A.17.07, for the words and figures "Free fatty acids as oleic acid. Not more than 3.0 per cent", the words and figures "Acid value. Not more than 6.0" shall be substituted;

(viii) in entry (e) of item A.17.08, for the words and figures "Free fatty acids as oleic acid.. Not more than 3.0 per cent", the words and figures "Acid value. Not more than 6.0" shall be substituted;

(ix) in entry (e) of item A.17.09, for the words and figures "Free fatty acids as oleic acid. Not more than 3.0 per cent", the words and figures "Acid value. Not more than 6.0" shall be substituted;

(x) in entry (e) of item A.17.10, for the words and figures "Free fatty acids as oleic acid. Not more than 3.00 per cent", the words and figures "Acid value. Not more than 6.0" shall be substituted;

(xi) in entry (e) of item A.17.11, for the words and figures "Free fatty acids as oleic acid. Not more than 3.0 per cent", the words and figures "Acid value. Not more than 6.00" wherever occurring, shall be substituted;

(xii) in entry (e) of item A.17.12, for the words and figures "Free fatty acids as oleic acid.. Not more than 3.0 per cent", the words and figures "Acid value.. Not more than 6.0" shall be substituted;

(xiii) in item A.17.13, for the words and figures "Free fatty acids as oleic acid. Not more than 1.25 per cent", the words and figures "Acid value.. Not more than 2.50" shall be substituted;

(xiv) in entry (e) of item A.17.14, for the words and figures "Free fatty acid as oleic acid. Not more than 0.25 per cent", the words and figures "Acid value. Not more than 0.50" shall be substituted

(xv) for item A.17.15, for the existing entry the following entry shall be substituted, namely:-

"A.17.15. "Refined vegetable oil" means any vegetable oil which is obtained by expression or solvent extraction of vegetable oil bearing materials, deacidified with alkali and/or physical refining and/or by miscella refining using permitted foodgrade solvents followed by bleaching with absorbent earth and/or carbon and deodourised with steam. No other chemical agent shall be used. The name of the vegetable oil from which the refined oil has been manufactured shall be clearly specified on the lable of container. In addition to the under-mentioned standards to which refined vegetable oils shall conform to the standards prescribed in these rules for the specified edible oils shall also apply except for acid value which shall be not more than 0.5. Moisture shall not exceed 0.10 per cent by weight;";

(xvi) in item A.17.16, for the words and figures "Free fatty acids as oleic acid.. Not more than 3.0 per cent", the words and figures "Acid value.. Not more than 6.0" shall be substituted;

(xvii) in entry (e) of item A.17.17, for the words and figures "Free fatty acids as oleic acid.. Not more than 3.0 per cent", the words and figures "Acid Value. Not more than 6.0", shall be substituted;

(xviii) in item A.17.18, (i) for the brackets, letter, words and figures "(g) free fatty acids (expressed as oleic acid). Not more than 3.0 per cent OR" shall be omitted.

(ii) in last para, for brackets, letter, words and figures, "free f
fatty acids content which shall not be more than 0.3 per cent
value being not more than 0.6)", the words and figures, "acid
which shall be not more than 0.6", shall be substituted;

(xix) in item A.17.19 the brackets, letter, words and figures "(f) Free fatty acids (expressed as oleic acid). Not more than 5.0 per cent OR" shall be omitted;

(xxi) in item A.17.21, the brackets, letter, words and figures "(e) Free fatty acids (expressed as oleic acid) .. Not more than 3.0 per cent OR" shall be omitted;

(xxii) in item A.17.22, the brackets, letter, words and figures "(e) Free fatty acids (expressed as oleic acid). Not more than 3.0 per cent OR" shall be omitted;

(xxiii) in item A.17.23, the brackets, words and figures, "(v) Free fatty acids (as oleic acid) . Not more than 0.25 per cent by weight OR" shall be omitted;

(xxiv) in entry (a) of item A.17.21, for the words and figures "Free fatty acids as oleic acid. Not more than 1.0 per cent by weight", the words and figures "Acid value . Not more than 2.0", shall be substituted.

(The Gazette of India Part II-Section 3 - sub-section (i) No.183, 8 April 1988)

350 Prevention of Food Adulteration Rules (Fourth Amendment) 1988

1. (1) These rules may be called the Prevention of Food Adulteration (Fourth Amendment) Rules, 1988.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Prevention of Food Adulteration Rules, 1955 (hereinafter referred to as the said rules), after clause (f) of the rule 32, the following shall be inserted, namely:-

"(g) where aspertame (methyl ester) is marketed as table top sweetener, it shall not contain more than 18 mg of aspertame (methyl ester) in a tablet and shall be in moisture proof package. The date of expiry shall be mentioned and the expiry period shall not be more than three years from the date of packing.

3. After sub-rule (ZZZ) of rule 42 of the said rules, the following shall be added, namely:-

"(ZZZ) (1) :- Every package of food which is permitted to contain artificial sweetener mentioned in table given in rule 47 shall carry the following label, namely :-

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This..................(name of food) contain
..................(name of artificial sweetener)

(ZZZ) (2) - Every package of aspertame (methyl ester) marketed as table top sweetener shall carry the following label namely:-

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WARNING

(i) FOR DIABETICS ONLY
(ii) TO BE USED ON MEDICAL ADVICE
(iii) NOT TO BE USED BY PREGNANT WOMEN CHILDREN OR OTHERS HAVING SYMPTOMS OF PHENYLKETONURIA

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4. Sub-rule (g) of rule 44 shall be omitted.

5. For rule 47 of the said rules, the following rule shall be substituted, namely:-

"47. Restriction on use and sale of artificial Sweeteners:

(1) No artificial sweetener shall be added to any article of food:

Provided that artificial sweeteners may be used in following food article in quantities not exceeding the limits shown against them and shall bear the lable declaration as provided in (1) of sub-rule (ZZZ) of rule 42.

Sl.No.	Name of artificial sweetener	Article of food	Maximum limit
1	2	3	4
1.	Saccharine sodium	Carbonated water	100 P.P.M.

Provided that saccharine sodium or aspertame (methyl ester) may be said as table top sweeteners and may contain carrier/or filler articles.

Provided further that saccharine sodium and aspertame (methyl ester) should conform to the standards laid down under item A.07.10 and A.07.12 of Appendix 'B' of these rules, respectively:-

(2) No mixture of artificial sweeteners shall be added to any article of food or in the manufacture of table top sweeteners.

(3) No person shall sell aspertame as table top sweeteners, except for diabetic use and only under medical advice under label declaration as provided in (2) of sub-rule (ZZZ) of rule 42:

6. In rule 57 of the said rules, in the Table after item 5 and the entries relating thereto, the following items and entries shall be added, namely:-

1		2	3
6.	Cadmium	All foods	1.5
7.	Mercury	Fish	0.5
		Other food	1.0
8.	Methyl Mercury (Calculated as the element)	All foods	0.25"

7. In rules 60 and 61 of the said rules, the words "and Brominated Vegetable Oils" shall be omitted.

8. After rule 62 A of the said rule, the following rule shall be inserted, namely:-

"62 B. Use of release agents in confectionery :

Spreadasil silicon spray (Dimethyl Polysiloxane) if used, as release agent in confectionery, shall not exceed 10 ppm of the finished product".

9. For rule 63A of the said rules, the following rule shall be substituted, namely:-

6 "63 A. Restriction on use of flavouring agents:

The use of the following flavouring agents are prohibited in any article of food, namely:-

1. Coumarin and dihydrocoumarin;
2. Tonkabean (Dipteryladorat); and
3. B-asarone and cinamyl anthracilate"

10. After rule 64 BB of the said rules, the following shall be inserted, namely:-

"64BBB. Use of menthol :

Menthol, may be used in following food articles in quantities not exceeding the limits shown against each :-

Sl.No.	Food	Maximum limit (Percentage by weight)
1.	Pan Masala	0.03
2.	Chewing Tobacco	0.3
3.	Confectionery	0.1

11. In Appendix 'B' of the said rules, after item A.07.11, the following item shall be inserted, namely:-

"A.07.12-Aspartyl phenyl alanina methyl ester commonly known as Aspertame, having empirical formula as $C_{14} H_{18} N_2 O_5$ and molecular weight as 294.31, shall be the material which is slightly soluble in water and Methanol. It shall contain not less than 98 per cent and not more than 102 per cent of Aspertame on dried basis. It shall not contain more than 3 ppm of Arsenic and 10 ppm of Lead.

The loss on drying of the material at 105°C for 4 hours shall not be more than 4.3 per cent of its weight. The sulphate ash shall not be more than 0.2 per cent. It shall not contain more than 1 per cent of diketo-piper-zinc".

(The Gazette of India Part II - Section 3-Sub.section (i) No.196 15 April 1988)

351 Quality control for food processing industries

The Development Council for Food Processing Industries whose term period expired on July 16,1988 constituted a Panel on Research and Development and Human Resource under the Chairmanship of Dr. M.V. Rao, Special Secretary, Agriculture Research and Education. According to Minister of State for Food Processing Industries, Jagdish Tytler the panel had identified priority areas for research and development activities. Emphasis had been placed on quality control and design and development of machinery and equipment for food processing industries.

The panel had also recommended that a coordinating mechanism to make use of the existing institutions and facilities in the field of food processing to be set up so as to strengthen them whenever required and tune their output to meet the well identified national needs on the basis of a mission oriented approach. The recommendation made by the panel and its implications would have to be studied by the Government indepth before any further action is contemplated, the minister said.

(Commerce, 157(4032), 1988, 32)

352 Quality maintenance of export goods

A Cell in the ministry of commerce will be set up soon to deal "effectively" with foreign buyers complaints about sub-standard quality of goods supplied by Indian exporters and non adherence to delivery schedules. It will also look after complaints about non-payment of normal commission.

Commerce and finance minister Narayan Datt Tiwari has taken a serious view of the frequent complaints received from buyers abroad against Indian suppliers which include the State Trading Corporation (STC), Trade Development Authority (TDA) and other export organisations and companies.

The cell would monitor the complaints which are to be looked into promptly. In this way, it should be possible to generate confidence among importers, which is crucial promoting exports.

The minister, in fact, had a meeting with export inspection agencies last week to discuss the quality issue. He made it clear that substandard goods should not leave the Indian shores. He asked representatives of these agencies, which include the export inspection counc not to harass the exporters and clear the goods without "redtapism". (The Economic Times 27 May 1988, 1)

353 Calcium availability in heated milk

Researchers at Dundee University have found that sterilization of milk by heating at high temperature reduces calcium available for human body. The high temperature exposure makes the calcium in the milk less soluble and so reduces the amount the body can absorb.

In fresh milk calcium comes in small soluble packages called micelles. Inside the micelle the calcium is electrostatically bound to a protein called casein. The association of calcium and casein keeps the calcium soluble by preventing it from forming insoluble salts. The researchers treated the micelles to high temperatures to investigate how much calcium remained in the soluble form. They isolated casein micelles from pasteurized milk from cows and from reconstituted milk granules. The researchers then passed a buffer solution containing casein and radioactively labelled calcium through length of rat's intestine. To make the experiment as realistic as possible they acidified and neutralised the micelle solution simulating digestio Artificial blood flowed outside the rat intestine.

The amount of calcium absorbed into the blood from sterilised and freeze-dried milk was 20% less than the amount absorbed from pasteurized milk. Researchers, therefore conclude that heating milk to a high temperature alters the molecular properties of casein and reduces its ability to keep calcium soluble.

This research finding should be of particular interest to milk producers and also suggest that growing children and pregnant women should not rely on high temperature sterilised milk as their source of calcium.
(Chemical Weekly 34(1), 1988, 81)

4 A new bacteria causing food poisoning

Listeria has come into limelight in USA and Western Europe and has led to 'Listeria hysteria' among food producers. The organism identified is Listeria monocytogenes. Most outbreaks of food poisoning by this organism identified have mostly been associated with L. monocytogenes type 4b.

L.monocytogenes is widely distributed in nature and has been found in soil, sewage, rivers, vegetable and animal tissues and food manufacturing and kitchen premises. Its entry into the food chain via raw milk, meat and vegetables is inevitable. It can grow from about zero to 45°C. Growth is slow upto 4°C but between 5 and 10°C - the temperature of most refrigerators - the bacteria can multiply to 1 million cells per ml. in a few days in some foods. It can also tolerate high concentrations of salt. Preserved meats may be also in a similar category Prepacked salads are currently undergoing intensive tests as they have been also shown to be a source of Listeria.

In people, the effects of L.monocytogenes range from a mild flu-like malaise to meningitis and abortion, and include septicaemia, pneumonia, skin lesions and mental retardation in children. Most deaths are attributed to meningitis and fatalities are attributed to suppressed immune system.

Confusion over Listeria is still widespread. The WHO and the Department of Health of UK recommend that manufacturers of sample food for the bacterium, but these bodies do not suggest any 'safe' levels for the bacterium. The FDS in USA now has agreement with France for certification of imported cheese for the absence of Listeria.

Listeria may have been transmitted in foods for years but its importance in food hygiene has only recently become clear. Its control however may prove difficult.
(Chemical Weekly. 34(5), 1988, 76-77)

Cadmium in cuttle fish

Experiment conducted in the Central Institute of Fisheries Technology (CIFT), Cochin, has revealed that removing the liver from cuttle fish before processing is an effective method to keep the fish free from cadmium content.

Cadmium is highly toxic to man and has been implicated as possible causes of hyper tension. Kidney ailments and skeletal deformation, according to a CIFT release

(Financial Express 1 October 1988, 8)

Wall coating eradicates fungus and bacteria

Steridex manufactured by Liquid Plastics Ltd, UK, is a tough and highly durable, plastics based coating, which eliminates the growth of micro-organis such as mould, fungi, yeast and bacterial colonies on its surface. It is water based and is free from phenols, mercurials, arsenic and toxic heavy metal complexes. Its highly effective fungicidal system does not leach out as in conventional fungicidal paints but lasts throughout the life of the product. It is highly elastic and expands and contrasts with thermal and structural movement obviating cracking and flaking. Easily applied with brush or spray equipment, Steridex forms a tightly adherent tough plastic skin which is vapour permeable to allow damp surfaces to dry out while providing a barrier against further water ingress. It is specifically designed for use in the pharmaceutical industry, food and beverage industry, hospitals, clinics, electronic and high technology clean rooms and whenever the strictest hygiene controls are essential.

For more details write to: Klenzaids Micro-Environment Systems Pvt Ltd A-21 MIDC Indl. Area, Andheri (East), Bombay 400 093

(Chemical Products Finder 7(5), 1988, 87)

TRANSFER OF TECHNOLOGY AND NEW INDUSTRIES

7 Undersea marine biotechnology

The new world of undersea biotechnology is the focus of a research programme planned bv Japan's MITI. The project will investigate 1500 varieties of marine plants and animals including kelp, isolating useful chemicals and finding ways to produce them through genetic engineering.

The researchers will need to develop new technologies for cultiva ting cells in conditions similar to those under the sea. One goal is to study microorganisms that could clean up marine pollution and find ways to improve them and cultivate them on an industrial scale.

The project is due to get underway in the autumn of 1988, although officials report that the approval of the budget is still to be received from MITI. The MITI has targeted biotechnology as a vital industry for Japan's future.

At least 12 Japanese companies have said they are interested in forming the marine project, which will be based at two centres to be built at a cost of £ 26 million

(Chemical Weekly 34(9), 1988, 75)

358 Kotharis setting up beer project

Kothari Industrial Corporation is setting up a Rs. 4.71 crore project at Hallkhed in Bidar district in Karnataka, for the productio of beer. The project will have a licensed capacity of 50,000 hecto litres. The estimated annual turnover from the project is put at Rs. 2.60 crore.

(Chemical Products Finder 7(4), 1988, 160)

359 20th Century diversifies

20th Century Finance Corporation has diversified into the manufacture of fruit juices in tetrapacks in a joint venture project at Ghaziabad near Delhi. The plant is expected to go on stream in mid-September, 1988.

(Industrial Products Finder 16(11), 1988, 65)

360 Food Specialities new project

FOOD Specialities Ltd is setting up a new factory for producing instant coffee in Nanjangud, Karnataka. The plant is expected to be in operation by the end of this year. The company has also embarked upon a modernisation-cum-expansion scheme at the existing unit in Moga.

(Chemical Products Finder 7(3), 1988, 134)

361 All-India Tasty Bite launch soon

Tasty Bite Eatables Ltd has commenced production of ready-to-serve food and frozen vegetables. The company's ready-to-serve foods, first of their kind in India, have a 12 month shelf life without refrigeration.

The first commercial launch in Bombay received good response from consumers. Encouraged by this, the company has set a turnover target of about Rs. 5.00 crores by March 1989. The product will soon be launched all over India, including in semi-urban areas.
(*Business India 31 October-13 November 1988, 16*)

362 Indo Japan Photo's food division launches product

The Food Division of the Indo Japan Photo Film Co. Ltd. has launched its first ready-to-eat products under the name of Kirrmax. The company's plant, set up at Gurgaon, is fitted with imported machinery from the UK and the Netherlands. The company is poised to launch breakfast cereals soon.
(*Chemical Products Finder 7(3), 1988, 125*)

363 Ready-to-eat products from Snack Foods

NANO Bhai Snack Foods, promoted by Mr. Navin Shah, is going in a big way for the manufacture of ready-to-eat food products. For the first time in the country, the company has introduced potato bhujia in a unique packaging that protects the products in four different ways to ensure crisp freshness for months. Initially, this has been launched in Delhi and Madhya Pradesh.
(*Chemical Products Finder 7(5), 1988, 157*)

364 New brand cottonseed oil launched

HYNOUP Food and Oil Industries Ltd, the Ahmedabad-based firm, has launched Maruti, an agmark-bearing cottonseed oil, in Delhi and surrounding areas. This cottonseed oil has high percentage of poly-unsaturated-fats, which is good for the heart and easy to digest. It is also less expensive.
(*Chemical Products Finder 7(5), 1988, 161*)

365 Soyabean processing plant in Orissa

ORISSA Agro-Industries Corporation (OAIC) is promoting a Rs. 1 crore soyabean oil-cum-cake processing plant, to be set up in the south-western parts of Orissa. The plant, which will be the first of its kind in Orissa, will be on stream by next year. It will be producing h protein ready-to-eat food, according to Mr Hrushikesh Panda, Managing Director of OAIC.

(Chemical Products Finder 7(5), 1988, 159)

366 TN Salt Corporation Project to go on stream

The Tamil Nadu Salt Corporation's iron-fortified salt project (IFSP), which is the first of its kind in India, is poised to launch the commercial production. Trial runs have already been successfully conducted and the product has been given a clean chit by laboratory.

This Rs 25 lakh project, funded by UNICEF, is coming up in Vallikonam in Ramanathapuram district. The project capacity is 15,000 tonnes per annum. But in the first year of operation, it plans to product 6,900 tonnes of iron-enriched salt.

The iron-fortified salt is superior to that of the iodized salt in more than one way, claims Mr. D Sridharan, Chairman of the Tamil Nadu Salt Corporation.

(Chemical Products Finder 7(4), 1988, 158)

PERSONALIA

Nil.